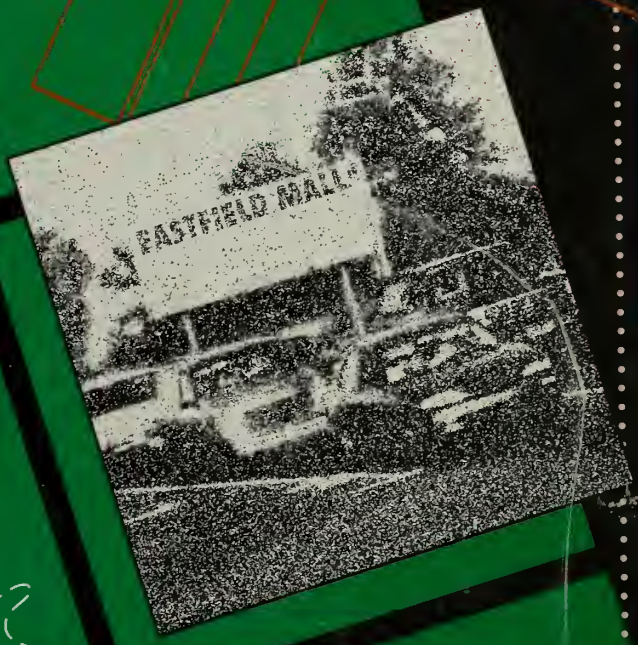
BOSTON ROAD CORRIDOR STUDY

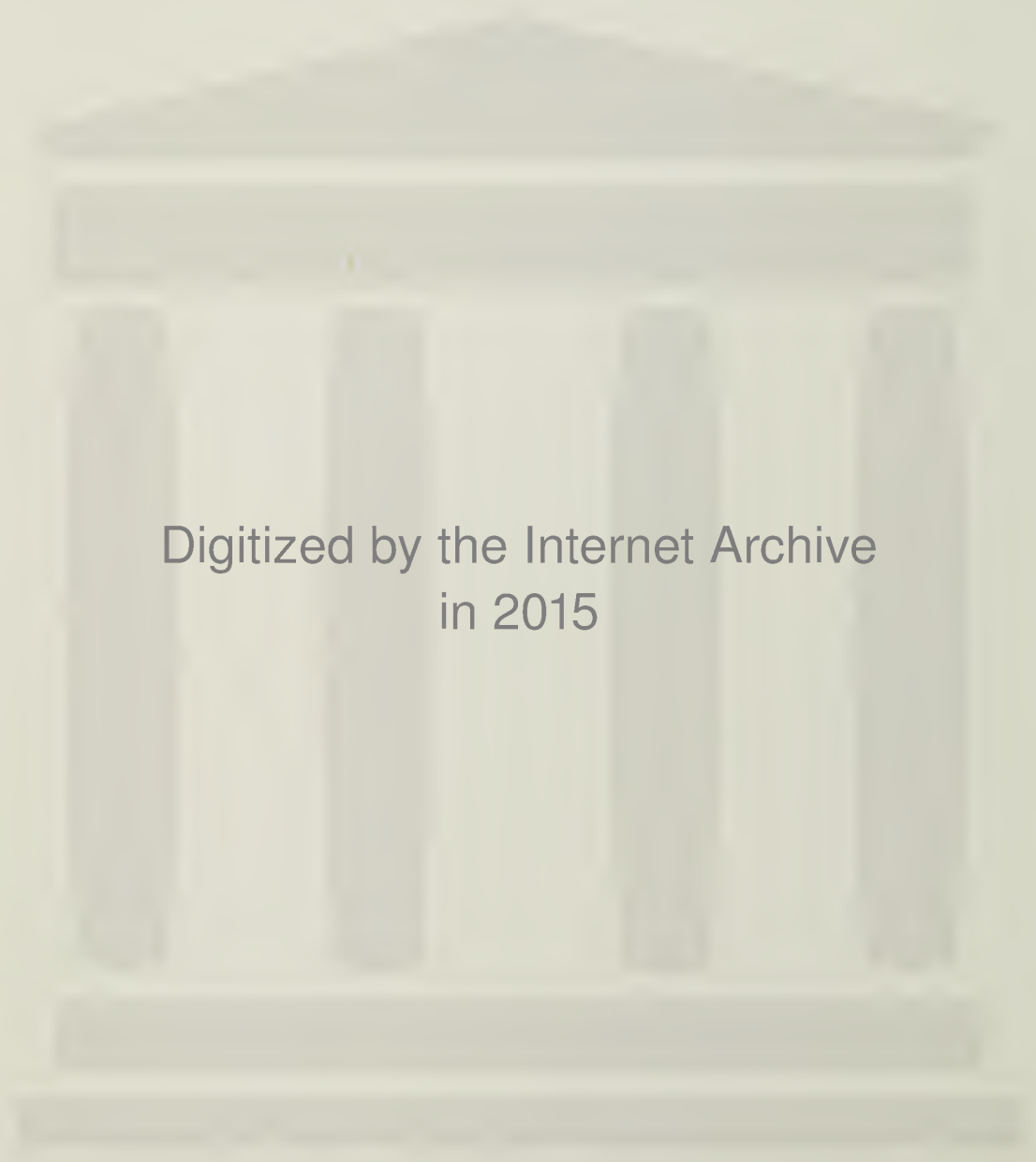
September 1995

MASS.
Y3.LP1:
B65



UMASS/AMHERST
312066016529473

Conducted as a cooperative effort with the communities of Springfield and Wilbraham, Massachusetts Executive Office of Transportation and Construction, Federal Highway Administration and Federal Transit Administration.



Digitized by the Internet Archive
in 2015

https://archive.org/details/bostonroadcorrid00pion

BOSTON ROAD CORRIDOR STUDY

FINAL REPORT
September 1995

Prepared for:
City of Springfield and the Town of Wilbraham
Massachusetts Highway Department

Prepared by:
Pioneer Valley Planning Commission
26 Central Street
West Springfield, Massachusetts 01089

This report was prepared in cooperation with the Executive Office of Transportation and Construction, the Federal Highway Administration and the Federal Transit Administration.

PREFACE

A Corridor Planning Study is a process that identifies existing transportation deficiencies. It analyzes and evaluates alternative solutions to the problem in terms of their social, environmental, economic, and land use impact. Corridor Planning Studies must result in a clear set of decisions to mark the end of the planning stage and the beginning of the project implementation stage. They make recommendations on the further analysis of project alternatives and identify those worthy of more detailed evaluation. The entire Corridor Study Planning Process is based on the early involvement of a Corridor Advisory Committee to add local perspective to the study. Extensive input from local officials and the general public is encouraged over the full duration of the study process.

The Boston Road Corridor study began in June of 1994 in response to existing transportation and safety problems resulting from the intense development along the corridor. The study was conducted in phases and presented in a series of technical reports. The first two phases consisted of examining the existing conditions, both transportation and land use. The second phase examined the future conditions along the corridor through the generation of future build-out scenarios and identified preferred improvement alternatives. The final phase of the study was to combine the three technical memorandums and incorporate the local comments into a final report. Presentations and communications with local committee groups and the Massachusetts Highway Department were conducted to ensure the report was consistent with both local and regional transportation plans.

The Pioneer Valley Planning Commission would like to acknowledge the participation of the members of the Boston Road Corridor Advisory Committee whose input and comments were vital to the completion of this study. All committee members were appointed by the chief elected officials of the City of Springfield or Town of Wilbraham.

Member	Affiliation
James Staples	Pine Point Community Council
David Moriarty	Springfield Planning Department
Al Chwalek	Springfield Department of Public Works
Captain Joseph Parylak	Springfield Police Department
John Pearsall	Wilbraham Planning Administrator
Gale Candaras	Wilbraham Board of Selectman
Frederick Fuller III	Wilbraham Planning Board
Edmund Miga, Jr.	Wilbraham Department of Public Works
Chief Daniel Merritt	Wilbraham Fire Department
Richard Butler	Wilbraham Planning Board/PVPC Chairman

BOSTON ROAD CORRIDOR STUDY
FINAL REPORT
TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

The Boston Road Corridor is an important east-west highway for Springfield and Wilbraham. In Springfield, the Boston Road Corridor area serves as a major retail resource for the region and provides many services to local residents. For Wilbraham residents the Boston Road Corridor serves as a major commercial corridor, providing many retail and service uses to local residents.

The City of Springfield incorporates 33.04 square miles of land or 20,344 acres and is located in the center of Hampden County. Springfield is home to ten of the region's twenty largest employers, including Massachusetts Mutual Life Insurance Company and Smith & Wesson Company. Springfield has 156,983 residents, a modest increase of 3 percent since 1980. Approximately 60 percent of Springfield's workforce works in Springfield. The majority of land in Springfield is residential (49 percent).

The Town of Wilbraham encompasses 22.28 square miles or 13,982 acres and is located near the center of Hampden County. Wilbraham is primarily a residential community with some commercial/industrial uses located on Boston Road, the northern edge of town. Wilbraham is home to 12,635 residents, a 5 percent increase over its 1980 population. Approximately 85 percent of its workforce commutes out of Wilbraham. The majority of land in Wilbraham (66 percent) is undeveloped land.

Recently, the proximity of the corridor to the major interstate transportation routes, Route 291 and Route 90, has encouraged development. As proposals for new businesses and residential developments continue to increase along the corridor, the planners and residents in Springfield and Wilbraham must decide what types of land uses are appropriate and the level of traffic the corridor can accommodate. The purpose of this study is to examine the existing land use and traffic conditions and what impacts future development will have along the corridor. This information will paint a picture of "the way things are" along the corridor so that the planners and residents can anticipate "how things could be" in the future.

1.10 DESCRIPTION OF THE STUDY AREA

The Boston Road Corridor Study Area is defined as extending from the intersection of Breckwood Boulevard and Boston Road in Springfield easterly to the interception of Route 20 (Boston Road) at the Boston Road and Pasco Road intersection through the Springfield-Wilbraham municipal boundary to the Wilbraham/Palmer town line. The entire Boston Road Corridor Study Area is shown on Figure 1.1-1.

Boston Road Corridor Study

Study Area

Springfield/Wilbraham

Study Area Boundary
Boston Road
Study Area

Scale

1/2 0 1 mile

1000 0 6000 feet

Prepared by:

–Pioneer Valley Planning Commission
26 Central Street, West Springfield, MA 01089, August, 1994

in cooperation with:

–Massachusetts Executive Office of Transportation and Construction
–Federal Highway Administration
–Federal Transit Administration

Digital data from:

–Massachusetts Executive Office of Environmental Affairs, MassGIS
–Massachusetts Highway Department
–Pioneer Valley Planning Commission

This map represents the best available data and is for planning purposes only.

2.0 EXISTING CONDITIONS

2.10 PURPOSE OF LAND USE ANALYSIS

Land uses and highway corridors are strongly linked to one another. Construction of a new highway or improvement of an existing highway improves the accessibility of the motorist to the areas adjacent to the highway and, in turn, attracts new development. The land uses permitted for new development along the highway directly affect the traffic conditions on the highway itself. The traffic volumes, traffic flow, turning movements and pedestrian use of a highway are a result of the land uses along the corridor. For example, retail land use typically generates more traffic than industrial land use. Thus, if the land uses permitted along a corridor are changed from industrial use to retail use, planners can expect an increase in traffic along the corridor. Another example of the influence land uses have on the corridor can be shown by examining the relationship certain types of uses have on turning movements. Convenience stores, restaurants with drive-through windows, and gas stations typically generate higher numbers of turning movements along the highway than other type of retail uses.

This linkage, between land use and traffic, offers an opportunity for policy makers to alter traffic patterns through land use measures, such as zoning. An analysis of land use along the Boston Road Corridor Study Area has been prepared to study the specific linkage patterns between traffic and current and future land uses. An understanding of this information will be used to make land use recommendations to improve traffic conditions along the corridor.

The land use section of this study contains the results of the analysis of land use data for the Boston Road Corridor study area and consists of the following:

- the identification and mapping of environmentally sensitive areas, include soil, floodplain, wetlands, and steep slope.
- an inventory of the existing public utilities along the corridor.
- an inventory of existing land uses in the study area including number of parcels in the corridor, the number of curb cuts along the corridor, the number of structures, and the types of land uses.
- a summary of zoning tools in Springfield and Wilbraham for the corridor.
- an assessment of development constraints including public utilities, land availability and zoning constraints.
- an assessment of development trends including building permit activity, proposed development sites, and the visual characteristics along the highway.

2.20 LAND AND ENVIRONMENTAL CHARACTERISTICS

2.21 Soil Characteristics

The majority of the Boston Road Corridor study area is not subject to soil limitation for development. There is only one soils classification in Springfield (Urban land-Hinckley-Windsor), while there are two soils classifications in Wilbraham (Narragansett-Charlton, Hinckley-Windsor-Merrimac).

Springfield. The entire length of the Springfield segment of the Boston Road Corridor is classified as Urban land Hinckley-Windsor. This soils classification is given to land that is so covered by structures, public works and public utilities that identification of the soils is not possible. The underlying Hinckley-Windsor soils have been concealed, leveled, filled in or destroyed by the construction of man-made structures and utilities. Development due to soil conditions will not be a deterrent to development in the Springfield segment of the corridor.

Wilbraham. Narragansett-Charlton soils are found in a small segment of the Wilbraham corridor area to the east near the Wilbraham/Palmer town line. These soils are generally located on land where the terrain can range from gently sloping to steep and are well-drained. Stones and boulders are scattered along the surface in many areas of this area. This soils classification presents some limitations to development due to the stoniness and steep slope.

The largest segment of the Wilbraham portion of the Boston Road corridor is categorized as having Hinckley-Windsor-Merrimac soils. Hinckley-Windsor-Merrimac soils are excessively drained, very permeable, retain water and are found on ground that is generally nearly level. The conditions of these soils present minimal limitations to development.

2.22 Wetlands

Along the Boston Road Corridor, there are seven areas of significant wetlands, with three sites in Springfield and four sites in Wilbraham.

In Springfield, the wetlands are located adjacent to Five Mile and Loon Ponds, an area south of Rollins Street adjacent to Boston Road, and an area of wetlands near Shumway Street that are connected with the North Branch of the Mill River.

In Wilbraham, wetlands are concentrated near Spear Brook, Tributary A, Nine Mile Pond, Spectacle Pond, and a stream that runs past Wilbraham Junior High and empties into the Chicopee River. These wetlands are, for the most part, classified as evergreen and deciduous forested wetlands. They tend to follow the floodplain areas of nearby waterbodies and, therefore run in long narrow bands.

Overall, the identified wetland areas represent a modest portion of the land area in the corridor and do not represent a significant deterrence to development.

2.23 Floodplain Areas

The floodplain areas in the Boston Road Corridor are associated with a variety of waterbodies including small tributary streams, larger streams, lakes and the Chicopee River. In the Springfield portion of the corridor, the only floodplain area is adjacent to the Loon Pond Tributary which crosses Boston Road near Jamaica Street.

In the Wilbraham portion of the Boston Road Corridor, there is one large floodplain area and one minor floodplain area. The largest is the Chicopee River floodplain which follows the length of the Chicopee River near the intersection of Brainard Road/Boston Road to a point east of Maynard Road. Most of this floodplain area is not readily developed because it is bounded to the south by a railroad line. Although the Chicopee River floodplain crosses over Boston Road at two points - near the intersection of Cottage Avenue/Boston Road and near the intersection of Maynard Street/Boston Road - the areas affected by the floodplain are small. The small floodplain area is the Nine Mile Pond floodplain which is restricted to a narrow band around the pond.

Overall, the identified floodplain areas represent a modest portion of the land area in the corridor and do not represent a significant deterrence to development.

2.24 Steep Slopes

Steep slope is defined as those slopes grades of 15 percent or greater. In the Boston Road Corridor study area there are very few areas with steep slope. In fact, there are no steep slopes at all in the Springfield segment of the corridor. In Wilbraham there are isolated pockets of steep slope in the corridor.

In the Wilbraham segment of the Boston Road Corridor, there are two areas where more than one ridge of steep slope can be found. The first area is in the eastern portion of the corridor and runs from the intersection of Lebel Road/Boston Road to the Wilbraham/Palmer town line. This area of steep slope exhibits the soil characteristics of the underlying Narragansett-Charlton soils where slopes are expected to range from gently sloping to steep slope. Another small area of ridges is also in the eastern portion of the Wilbraham segment of the corridor at the intersection of Maynard Road/Boston Road. The ridges in this area run perpendicular to the corridor in a north-south direction. Three other isolated areas of steep slope are found: along a small stretch along the Chicopee River near the former site of a waster treatment plant, near the intersection of Brainard Road/Boston Road, and at the midpoint section of the intersections of Stony Hill Road/Boston Road and Brainard Road/Boston Road to the south of the corridor. Although these areas of steep slope may be a constraint to development to some individual parcels, steep slopes in the Wilbraham segment of the corridor are likely to have nominal development constraints.

A summary of the environmental constraints experienced along the corridor is presented on Figure 2.2-1.

Boston Road Corridor Study

Environmental Constraints

Springfield/Wilbraham

- Study Area Boundary
- 100 foot Wetlands Buffer
- Wetlands
- Steep Slopes > 15%
- 100 Year Flood Plain
- Open Water

Sources:

-National Wetlands Inventory Maps, Springfield North and Ludlow Quads, U.S. Department of the Interior, Fish and Wildlife Service, October, 1975

-Flood Insurance Rate Maps, Federal Emergency Management Agency
City of Springfield, MA.–June 17, 1991
Town of Wilbraham, MA., June 15, 1988

-Interpretation of the Springfield North and Ludlow USGS Topographic Quadrangles, 1979 and 1975, Pioneer Valley Planning Commission, 1994

-Massachusetts Executive Office of Environmental Affairs, MassGIS, 1990

Scale

1/2 0 1 mile

1000 0 6000 feet

Prepared by:

-Pioneer Valley Planning Commission
26 Central Street, West Springfield, MA 01089, August, 1994

in cooperation with:

-Massachusetts Executive Office of Transportation and Construction
-Federal Highway Administration
-Federal Transit Administration

Digital data from:

-Massachusetts Executive Office of Environmental Affairs, MassGIS
-Massachusetts Highway Department
-Pioneer Valley Planning Commission

This map represents the best available data and is for planning purposes only.

2.30 EXISTING LAND USE

2.31 Data Collection and Mapping Procedures

In order to assess land use and development trends along the Boston Road Corridor, Pioneer Valley Planning Commission staff gathered data from previous studies, assessors' records, municipal offices and "windshield surveys" of the Boston Road properties. The previous studies reviewed were the Boston Road Corridor Study (1990) by IEP, Inc. and the Route 20 Corridor Study (1993) by the Center for Economic Development. Data collected for all land parcels in the Boston Road Corridor study area included:

- Ownership
- Size of parcel
- Size of structures
- Current use
- Zoning district

This data has been entered and compiled into a computerized data base of the Boston Road Corridor Study Area parcels.

A new Boston Road corridor base map has been prepared to illustrate all parcels in the study area. Using this base map, the following working maps have been developed at a scale of 1" = 3000':

- Generalized Land Use for 1993
- Zoning
- Building Activity 1984-1993
- Public Utilities

2.32 Existing Land Use (1993)

This section includes a brief summary of some key land use features in Springfield and Wilbraham. For more information about existing uses in Springfield and Wilbraham see Appendix 2A.

There are a total of 759 parcels covering 1,458 acres in the Boston Road Corridor Study Area. In Springfield there are 198 parcels encompassing 28% of the total land area and in Wilbraham 261 parcels cover 72% of the land area of the corridor.

Commercial land uses account for 61% of all land in the Springfield portion of the Boston Road Corridor Study Area, followed by vacant land (27%) and residential uses (9%). Twenty-one percent of the land in the Wilbraham portion of the study area is classified as vacant, while 20% of the Wilbraham land is dedicated to governmental and institutional uses 17% to industrial uses and 15% to commercial uses. The average size of a commercial lot in Springfield is 1.5 acres and in Wilbraham is 2.2 acres.

2.33 Commercial Land Use Characteristics

Twenty-four percent (24%) of the land in the corridor study area is dedicated to commercial land uses. Sixty-four percent (64%) of this commercial land is located in the Springfield portion of the corridor study area, and thirty-six percent (36%) is located in Wilbraham. There are 2,799,077 square feet of commercial floor space in 205 structures in the Boston Road Corridor Study Area. However, the statistics regarding the apportionment of vacant and commercial acreage between Springfield and Wilbraham is significantly skewed in favor of Wilbraham because the corridor study area in Wilbraham extends further from Boston Road while the corridor study area in Springfield is limited to parcels which abut Boston Road.

In Springfield commercial uses are located on 90 parcels with a total of 232 acres. See Table 2.3-1. The dominant type of commercial use in Springfield is classified as a shopping center use. There are 10 shopping centers in Springfield with 1,188,912 square feet of floor space (or 57.5% of the type of commercial uses in the Springfield segment of the corridor) on 117 acres. Other retail uses are located on 22 parcels with 70 acres and 651,527 square feet of floor space (or 31.5% of the types of commercial uses in the Springfield segment of the corridor).

Table 2.3-1
Commercial Land Use Characteristics for Parcels Which Abut Boston Road in Springfield for the Boston Road Corridor Study

Commercial Type	Number of Parcels	Amount of Acres	Gross Floor Area ($ft.^2$)
Banks	3	1.49	6,164
Commercial Warehouse/Trucking	4	4.08	28,293
Retail	22	70.44	651,527
Shopping Centers	10	116.53	1,188.912
Supermarkets	0	0	0
Restaurants	28	20	94,434
Automobile Sales	9	15.11	65,051
Automobile Repair	2	0.28	4,516
Gas Stations/Car Wash	3	0.92	6,387
Office Space	8	3.00	21,054
Commercial Recreational Use (including arena)	0	0	0
Other Commercial Use	0	0	0
Total	90	232	2,066,338

Source: Boston Road Corridor Study, IEP, Inc., 1990, and Springfield Assessors' Records, Spring, 1994.

In Wilbraham, commercial uses are located on 124 parcels with a total of 178 acres. Office uses are the most dominant type of commercial use in Wilbraham. There are 17

parcels with 18 structures that account for 1,030,085 square feet of floor area (comprising 59.2% of all commercial uses in the Wilbraham segment of the corridor). The second most prevalent commercial use in Wilbraham are miscellaneous retail uses. They occupy over 50 acres of land and account for 23.7% of all Wilbraham commercial uses. See Table 2.3-2.

Table 2.3-2
Commercial Land Use Characteristics for the
Boston Road Corridor Study Area in Wilbraham*

Commercial Type	Number of Parcels	Amount of Acres	Gross Floor Area (ft.)^2
Banks	1	0.79	not available
Commercial Warehouse/Trucking	4	11.7	3,866
Retail	54	50.53	314,786
Shopping Centers	21	17.94	151,154
Supermarkets	0	0	0
Restaurants	11	10.1	68,966
Automobile Sales	4	25.75	41,128
Automobile Repair	4	11.98	22,941
Gas Stations/Car Wash	0	0	0
Office Space	17	24.22	1,030,085
Commercial Recreational Use (including golf course, arena)	3	9.66	38,345
Other Commercial Use	3	26.07	71,703
Total	122	188.74	1,325,825

Source: Route 20 Corridor Study, The Center for Economic Development, 1993, and Wilbraham Assessors' Records, Summer, 1993.
*Some parcels are not accounted for in this scan of the Wilbraham database because the Department of Revenue Codes are not available.

One land use which affects traffic uses by contributing significantly to traffic volumes and turning movements are restaurants. In the Springfield section of the study area, there are 28 restaurants. In the Wilbraham section of the study area, there are 11 restaurants, all of which abut Boston Road.

2.34 Residential Land Use Characteristics

Residential land use in the corridor study area is mostly single-family, comprising 241 of the 292 parcels in residential use. There are 166 units of multi-family housing in the Wilbraham Section of the study area and no multi-family units abutting Boston Road in Springfield. These include 7 multi-family units and 159 condominium units recently constructed at the Woodcrest complex off of Boston Road. Tables 2.3-3 through 2.3-5 provide detailed residential parcel characteristics.

Table 2.3-3
Residential Land Use Characteristics for the Boston Road Corridor Study Area in Springfield

Residential Type	Number of Parcels	Number of Acres	Number of Dwelling Units
Single Family	20	34.50	20
Two Family	2	0.29	4
Greater Than Two Family	0	0	0
Other Residential Use	0	0	0
Total	22	34.79	24

Source: Boston Road Corridor Study, IEP, Inc., 1990, and Springfield Assessors' Records, Spring, 1994.

Table 2.3-4
Residential Land Use Characteristics for the Boston Road Corridor Study Area in Wilbraham

Residential Type	Number of Parcels	Number of Acres	Number of Dwelling Units
Single Family	22 1	130	NA*
Two Family	41	12	NA*
Condominiums	1	2	166
Apartments	7	8	7
Total	270	152	

*Data not available.

Source: Route 20 Corridor Study, IEP, Inc., 1990, and Springfield Assessors' Records, Spring, 1994.

Table 2.3-5
Residential Land Use Characteristics for Parcels which Abut Boston Road in Wilbraham for the Boston Road Corridor Study Area

Residential Type	Number of Parcels	Number of Acres	Number of Dwelling Units
Single Family	79	86	NA*
Two Family	2	2	NA*
Condominiums	1	2	NA*
Apartments	3	7	NA*
Total	85	97	

*Data not available.

Source: Route 20 Corridor Study, The Center for Economic Development, 1993, and Wilbraham Assessors' Records, Summer, 1993.

2.35 Industrial Land Use Characteristics

Industrial land use accounts for ten percent (10%) of the land in the corridor study area. The majority of the industrial land uses are located in Wilbraham. There is only one industrial parcel in Wilbraham. For those parcels directly abutting Boston Road in Wilbraham, 9 of the 199 parcels (5%) and 30 of the 364 acres of abutting parcels are devoted to industrial use. There is 428,725 square feet of industrial floor space in 16 structures in the Boston Road Corridor Study Area.

2.36 Governmental and Institutional Land Use Characteristics

Governmental and Institutional land use accounts for 26 of the 744 parcels (4%) and for twelve percent (12%) of the land in the Boston Road Corridor Study Area. Governmental and Institutional land use accounts for three percent (3%) of the land area in Springfield, and for twenty percent (20%) of the land area in Wilbraham.

There are 16 structures dedicated to governmental and institutional uses in the Boston Road Corridor Study Area. In Wilbraham, there are 27,018 square feet of governmental and institutional floor space in 9 structures.

The database inventory used for this study does not identify any governmental or institutional uses in the Springfield portion of the corridor study area. However, Our Lady of the Sacred Heart Church and several parks are located in the study area even though they are not coded as governmental or institutional uses in the parcel database.

2.37 Undeveloped Land Characteristics

Nineteen percent (19%) of the land in the corridor is vacant. Seventy-nine percent (79%) of this vacant land in the corridor study area is located in Wilbraham, and 21% of the land is located in Springfield. Table 2.3-6 and Table 2.3-7 contain detailed information on the vacant land parcels in the study area. A summary of the generalized land uses along the Boston Road Corridor is shown on Figure 2.3-1.

Table 2.3-6
Vacant Land in the Boston Road Corridor Study Area

	# of Parcels	# of Acres
Springfield	47	28
Wilbraham	92	193

Source: Boston Road Corridor Study, IEP, Inc., 1990, and Springfield Assessors' Records, Spring, 1994. Route 20 Corridor Study, The Center for Economic Development, 1993, and Wilbraham Assessors' Records, Spring, 1994.

Table 2.3-7
Vacant Land in the Boston Road Corridor Study Which Abuts Boston Road

	# of Parcels	# of Acres
Springfield	47	28
Wilbraham	24	107

Source: Boston Road Corridor Study, IEP, Inc., 1990, and Springfield Assessors' Records, Spring, 1994. Route 20 Corridor Study, The Center for Economic Development, 1993, and Wilbraham Assessors' Records, Spring, 1994.

Boston Road Corridor Study

Generalized Land Use

Springfield/Wilbraham

- Study Area Boundary
- Agriculture & Forest
- Residential
- Commercial
- Industrial
- Recreation & Open Space
- Governmental & Institutional

Sources:

–1985 MacConnell Land Use, Resource Mapping, University of Massachusetts, MassGIS, Boston, March, 1990

–Building Permit and Assessor's Records, City of Springfield, 1994 and Town of Wilbraham, 1993

–Field verification

Scale

1/2 0 1 mile

1000 0 8000 feet

Prepared by:

–Pioneer Valley Planning Commission
26 Central Street, West Springfield, MA 01089, August, 1994

in cooperation with:

–Massachusetts Executive Office of Transportation and Construction
–Federal Highway Administration
–Federal Transit Administration

Digital data from:

–Massachusetts Executive Office of Environmental Affairs, MassGIS
–Massachusetts Highway Department
–Pioneer Valley Planning Commission

This map represents the best available data and is for planning purposes only

2.40 ZONING REVIEW

The purpose of this section is to examine the zoning bylaws and ordinances in effect along the Boston Road corridor to determine what, if any, recommendations can be made to improve the regulations that will influence future Boston Road development. By increasing local controls, Springfield and Wilbraham can minimize the problems associated with traditional commercial development.

2.41 Summary of the Springfield Zoning Ordinance

The Springfield section of the study area includes six zoning districts - two residential districts (Residence A, Residence B); two business districts (Business A, Business B); one commercial district (Commercial P) and one industrial district (Industrial A). The Residence A district permits the development of single-family dwellings at high-densities. The Residence B districts encourages a range of housing types at high-densities. The Business A district is also know as the General Business district and promotes a variety of business uses that service the at-large community, rather than the surrounding neighborhood. The Business B district is designated as a service business district and permits uses that are auto-mobile oriented and are heavier service businesses. These uses rely on a main highway or light industrial area in order to attract business. The intent of the Commercial P district is to permit land to be designated solely for open air parking lots. The Industrial A district permits a range of industrial and business uses compatible with a major urban center. See Appendix 2B for a complete listing of permitted uses within the Springfield segment of the corridor and for a table of dimensional regulations.

2.42 Problem Areas in the Springfield Zoning Ordinance

Although the Springfield Zoning Ordinance contains many useful zoning tools, there are some areas of concern. These include:

Non-Compliance with Massachusetts General Law Chapter 40A:

Nursery Schools/Day Care Centers. All nursery schools or day care centers with more than five children require a special permit from the City Council in the Residence A and Residence B districts and are prohibited in the Commercial P district.

In 1991, M.G.L. Chapter 40A was amended so that "no municipality could prohibit or require a special permit for a child care facility. A child care facility is specified as a day care center or a school age child care program, as defined in M.G.L. Chapter 28A, Section 9." This means that child care facilities must be permitted in all zoning districts.

The Springfield Zoning Ordinance conflicts with the Zoning Act by prohibiting nursery schools or day care centers in the Commercial P district and by requiring a special permit from the City Council for nursery schools and day care centers in the Residence A and Residence B.

Commercial P District Permitted Uses. The only permitted use in the Commercial P district is a open air parking lot. According to the intent statement of Section B-800, this district "is intended ..... for the sole purpose of open air parking ..."

Section 3 of M.G.L. Chapter 40A has established "protected" uses for all communities. Agricultural uses, educational uses, religious uses and child care facilities are protected uses and no zoning ordinance can prohibit, unreasonably restrict or require a special permit for any of these uses. In other zoning districts in the Ordinance, these protected uses are listed consistently as permitted uses, however this is not the case in the Commercial P district. This inconsistency could be interpreted by the reader to mean that these protected uses are not permitted in the Commercial P district.

The Springfield Zoning Ordinance may conflict with Section 3, Chapter 40A, by not including the "protected" uses (agricultural uses, educational uses, religious uses and child care facilities) in Section B-801.

Stables. All stables for the keeping or raising of horses as a business require a special permit from the City Council in the Business B and the Industrial A districts. This use is prohibited in all other zoning districts.

According to M.G.L. Chapter 128, Section 1A, agriculture "shall include farming in all branches ... the raising of livestock including horses, the keeping and raising of poultry, swine, cattle, and other domesticated animals ..." M.G.L. Chapter 40A, Section 3, states that "no zoning ordinance ... shall ... prohibit, unreasonably regulate or require a special permit for ... agriculture ... " Agricultural uses are protected uses and must be permitted in all districts. However, a municipality without an agricultural district may require that agricultural activities may be limited to parcels of more than 5 acres.

The Springfield Zoning Ordinance conflicts with M.G.L. Chapter 40A by requiring a special permit for the business of boarding stable in the Business B and Industrial B districts and by prohibiting the use in all other zoning districts.

Nonconforming Structures or Uses. Section 1500. 3. of the Springfield Ordinance allow a pre-existing nonconforming structure to be extended or altered by a special permit from the special permit granting authority (SPGA) or permit granting authority (PGA). The special permit is issued after the SPGA or PGA have found that the alteration, extension or change will not be substantially more detrimental than the existing nonconforming use to the neighborhood.

A 1991 decision by the Massachusetts Supreme Judicial Court in Rockwood v. The Snow Inn Corp. changed the requirements for special permits granted for nonconforming nonresidential structures or uses. The court recommended that the SPGA or PGA should follow a two step process in determining whether or not to grant a special permit for an alteration, extension or change to a nonconforming use or structure.

The Springfield Ordinance should be amended to include the recommended two-step process in determining whether or not to grant a special permit for an alteration, extension or change to a nonconforming nonresidential use or structure.

Organizational/Format Issues

Overall the Springfield Zoning Ordinance is very well organized. However, there are two things that the Planning Board could do to make the ordinance more "user-friendly." The Planning Board should consider adding a table of principal uses to make it easier for the reader to determine what uses are permitted in each district without flipping back and forth through a number of pages. Since the Springfield Ordinance has so many zoning districts it does not lend itself easily to a table format. However, tables could be generated based on a general category of zoning districts. For example, the Table of Principal Uses for Residential Districts would include Residence A-1, Residence A, Residence B, Residence C, Residence C-1 and Residence C-2 districts. A table would make the information more accessible to the general reader.

In addition, the Planning Board should consider amending the sign regulations to improve readability. Some of the sign specifications, such as size, number, type, and height could be included on a table. The table could be augmented by narrative text and footnotes.

Issues for Clarification

Use Regulations. The list of permitted uses for the zoning districts in the Springfield segment of the Boston Road Corridor Study is based on a pyramid system. This means that the permitted uses in the first zoning district identified in the Zoning Ordinance serves as the "starter list" for all other zoning districts. The permitted uses in the second zoning district will include the permitted uses from the first zoning district and some new permitted uses, while the third zoning district will include the permitted uses from the first and second zoning district and some new zoning district. This format of adding the permitted uses from the previous zoning district and some new uses builds the pyramid in a pyramid zoning system.

The pyramid zoning system was a standard way of designating zoning districts in the past. Usually there isn't any confusion regarding what uses are permitted in each zoning district. However, in the Business A district it is not clear if a few selected uses are included in a district. Permitted uses in the Business A district include any use permitted in the Commercial A district plus some new permitted uses. Permitted uses in the Commercial A district include any use permitted in the Residence C district and some new permitted uses. What is not clear is whether the uses that are designated as special permit uses in the Residence C district are permitted by right, by special permit or not at all in the Commercial A or Business A districts. *See Appendix for Table of Uses for Springfield.* In order to avoid confusion, the status of these uses should be clarified.

Issues for Planning Board Consideration

Driveway Standards. The Springfield Zoning Ordinance does not include any access control standards. Many businesses along Boston Road have exceedingly large curb cuts, and in some instances, the curb cuts run along the entire length of the street line of some businesses. The lack of any curbing blurs the definition of the boundary between business use and the corridor. It also makes it difficult for the passing motorist to determine where cars may or may not enter or leave the corridor. The motorist must watch the entire length of the street line in order to avoid accidents with cars leaving the road or returning to the road.

Landscaping and Vegetative Buffering. Nominal landscaping requirements exist in the Springfield Zoning Ordinance between the parking areas of permitted uses directly abutting or for the interiors of parking lots. Landscaping requirements are not applicable to many of the small lots directly abutting Boston Road. Landscaping may include grass only, which is not an adequate buffer between the corridor and the parking lot. Buffer strips between residential districts and business districts are insufficient to reduce the conflicts that occur between residential and business uses.

Off-Street Parking and Loading Requirements. The ordinance establishes a minimum number of parking spaces for most uses permitted in the Boston Road Corridor and many uses along the corridor do not appear to suffer from a lack of parking. Instead many of the larger parking lots have an excess of parking spaces. In addition to a minimum number of parking spaces required, for some selected uses (i.e. supermarket, shopping centers) there should be a maximum number of parking spaces instituted. Incentives should be included in the parking standards to provide transit access to larger developments. Off-street loading spaces should be sufficiently screened from the roadside.

In 1992, the Americans with Disabilities Act (ADA) went into effect. The ADA requires that multi-family, municipal, community, commercial, business, and industrial parking areas provide handicapped accessible parking spaces. The Springfield Zoning Ordinance should include a provision which requires parking areas to comply with all ADA requirement.

Performance Standards. The existing ordinance is well-drafted, but should be expanded to include performance standards for access/driveways, traffic reduction/mitigation measures, traffic impact statements for high-volume traffic generating uses, erosion control, stormwater control, hazardous material storage, and lighting standards.

Signs. The sign ordinance is very comprehensive for it contains sign definitions, general sign regulations, standards for signs permitted in all zoning districts, standards for signs permitted in each particular zoning district and nonconforming sign regulations. The sign ordinance appropriately limits the number of signs permitted per business use and shopping center.

The height limit for signs in the Business A and Business B district range from 30 feet for a ground sign for all business uses to 50 feet for a gas station ground sign. This is problematic for free-standing signs because it defeats the purpose of advertising to passing motorists. As the motorist drives near the sign it becomes impossible for the motorist to see the sign. A more appropriate free-standing sign height would be 15 to 20 feet.

Permitting signs in excess of 50 square feet on a road with a posted road speed of 30 to 40 miles per hour contributes to roadside clutter, making it difficult for motorists to distinguish between the signs. In the Business A and Business B districts a shopping center of less than 100,000 square feet can have a 250 square foot sign. A single business buildings may have a free-standing sign up to 200 square feet in size. Billboards are permitted in both business districts, with a maximum billboard size of 300 square feet in the Business A district and a maximum size of 700 square feet in the Business B district. A single large sign in a district may attract the attention of the passing motorist, but a motorist faced with miles of large signs will "tune out" all signage except the familiar (i.e. national franchises like McDonalds, Burger King or Wendy's) or his destination sign. These large signs do not attract much drive-by business, are very distracting to motorists, and contribute to roadside clutter.

Special Permits. Section 2005 of the Springfield Zoning Ordinance addresses special permit regulations. This section is very comprehensive and includes standards for authority and rules; hearing, notice and decision, planning board report, standards for review, and special permit conditions. However, Section 2005 does not establish any specific special permit criteria. Special permit criteria may help ensure that special permit uses will meet the needs of the community.

2.43 Summary of Wilbraham Zoning Bylaw In The Boston Road Corridor

The Wilbraham Zoning Bylaw is generally a well organized document and includes many traditional elements of a zoning bylaw including: definitions, the establishment of zoning districts, use regulations, dimensional regulations, signs, off-street parking and loading regulations, and administration and enforcement standards.

There are ten zoning districts in the Route 20 Corridor Study area in Wilbraham. The zoning districts are: General Business (GB), Multiple Dwelling (RMD), Limited Business (LB), Industrial-Professional Office Park-General Business (I-POP-GB), four residential districts (R-15, R-26, R-40 and R-60), a Flood Plain overlay district and a Groundwater Protection overlay district.

See Appendix 2C for a complete listing of permitted uses within the Wilbraham segment of the corridor and for a table of dimensional regulations.

The zoning bylaw also includes innovative zoning techniques such as Site Plan Review, Planned Unit Development, and Flexible Subdivision Regulations.

2.44 Problem Areas in the Wilbraham Zoning Bylaw

Although the Wilbraham Zoning Bylaw contains many useful zoning techniques, the Planning Board should reconsider the following standards:

Signs

The sign requirements contained in Sections 12 and 7.5.7.2 should be reconstructed to make interpretation easier for users. All of the sign specifications and requirements should be listed in tabular form in a single section. The table could show the quantitative requirements such as size and number limitations, in columns separated according to zoning districts. Other requirements could be stated in narrative form as an introduction or as footnotes to the table.

There are no provisions in the Wilbraham Zoning Bylaw for political signs in accordance with constitutional free speech requirements. The bylaw also lacks provisions for temporary signs.

Sign Size. The maximum sign height of twenty-five feet allowed in the General Business District is too high for a highway corridor where vehicle speed limits exceed 35 miles per hour.

Number of Signs. The allowance of multiple signs per property based on the number of building occupants may ultimately lead to sign clutter, causing the highway to take on the appearance of a "commercial strip."

Performance Standards. Some of the provisions included in Section 13.4 Site Plan Design Guidelines/Review Criteria would be more effectively implemented as performance standards instead of site plan review criteria. Planning Board recommendations made in a Site Plan Approval process are not binding on applicants. Criteria for vehicular and pedestrian circulation plans and minimum standards for surface water drainage should be instituted as mandatory performance standards. The Zoning Bylaw should also include performance standards and criteria for traffic impacts and trip reduction plans.

Landscaping, Vegetative Buffering, and Parking Lot Design. Section 7.5.6 specifies requirements for minimum landscaped areas for professional offices in the I-POP-GB District. Although Zoning Bylaw Section 6.3 requires a twenty foot landscaped buffer in side yard areas in office, shopping, and business districts it does not require minimum landscaped areas for the General Business or Limited Business zoning districts in the Boston Road corridor. Nor does the Bylaw require landscaping for the interior of parking areas. The absence of parking lot landscaping amidst a sea of pavement adds to the commercial strip appearance of highway corridors. Internal parking lot landscaping is also an effective tool for designing parking areas to enhance pedestrian safety.

Section 6.5.8.B.(2) is unclear in its requirement that landscaped areas not to be contiguous to the edge of the parking lot. This could be interpreted as trying to discourage landscaping at the outer edge of the parking lot adjacent to the street. Parking lot landscaping defines the edge between the road and business establishments and generally softens the visual appearance of the corridor.

Display Areas for Motor Vehicle Sales. Section 6.4 limits sales display to "indoor" areas. The intent is to discourage the inherently dangerous practice of pass by windshield shopping. The Bylaw does not define "indoor" and the definitions of "building" and "structure" in the Zoning Bylaw are loose enough so that the term "indoor" could be construed to be a structure as minimal as a "car port." Display of vehicles in car port type of structures will encourage pass by windshield shopping for motor vehicles.

Section 6.5.4 requires at least 1,000 feet of building for display of cars and trucks. This provision does not effectively limit the amount of outdoor display. A better method of limiting the preponderance of outdoor display is to specify a maximum percentage of the total developed lot area which may be devoted to outdoor display of motor vehicles.

Access Control. The Wilbraham Zoning Bylaw establishes no access control standards. There is a lack of standardized driveway requirements for business uses along the Wilbraham segment of the Boston Road Corridor. Access or egress points along the corridor can vary in size, with some points running along the entire length of the street line of some businesses. This poses a problem and does not encourage efficient and safe traffic along the corridor.

A summary of the generalized zoning in the Boston Road Corridor Study area is shown on Figure 2.4-1.

Boston Road Corridor Study

Generalized Zoning

Springfield/Wilbraham

- Study Area Boundary
- Residential
- Commercial
- Mixed Use & Industrial
- 100 Year Flood Plain

Sources:

-Building Zone Map of the City of Springfield, MA, City Planning Board, Revised January, 1992.

-Building Zone Map, Town of Wilbraham, Mass., Wilbraham Engineering Department, Revised February, 1993

-Also shown on this map are amendments adopted by Wilbraham, June 12, 1993

-Flood Insurance Rate Maps, Federal Emergency Management Agency
City of Springfield, MA.-June 17, 1991
Town of Wilbraham, MA., June 15, 1988

Scale

1/2 0 1 mile

1000 0 8000 feet

Prepared by:

-Pioneer Valley Planning Commission
26 Central Street, West Springfield, MA 01089, August, 1994

in cooperation with:

-Massachusetts Executive Office of Transportation and Construction
-Federal Highway Administration
-Federal Transit Administration

Digital data from:

-Massachusetts Executive Office of Environmental Affairs, MassGIS
-Massachusetts Highway Department
-Pioneer Valley Planning Commission

This map represents the best available data and is for planning purposes only.

2.50 DEVELOPMENT CONSTRAINTS

2.51 Public Utilities

Water

In Wilbraham, water mains in the Boston Road Corridor study area are supplied from two sources; the City of Springfield from their regional water system and from the Massachusetts Water Resource Authority's (MWRA) Quabbin Reservoir via a connection with the Chicopee Aqueduct. The MWRA supply services the majority of Wilbraham through the town's public water system under a contract that expires in the year 2000. The options of continuing the MWRA contract or obtaining water solely from Springfield will be evaluated in the near future. Currently, water purchased from the MWRA equals four percent of the town's budget. The future costs of water purchased from a neighboring town or from the MWRA could be as much as 50 percent of the towns budget according to the Wilbraham Board of Water Commissioners. Water is treated by an MWRA constructed chlorination facility at Windsor Dam to satisfy the Safe Drinking Water Acts chlorine contact time. As a result, Wilbraham did not have to construct a facility at town expense.

Water purchased from the City of Springfield is supplied to the area north of the railroad tracks in the western section of the corridor. The area consists primarily of residential uses along Acton, Weston, Dalton, Severyn, Opal, Walter and Bridge Streets; as well as Piney Woods Avenue, Stony Hill Road and the western section of Old Boston Road. Water is supplied to these streets via six and eight inch mains.

The commercial district along Boston Road, from the Springfield City Line to Cottage Street, is served by water purchased from the MWRA. An eight inch main supplies the area between the Springfield City line and Stony Hill Road. The eight inch main from Stony Hill Road to beyond Brainard Street was replaced with a sixteen inch main in 1991 to alleviate pressure problems during periods of peak use, and to increase capacity in this highly developed area. From the connection with the new main, Boston Road is serviced by sixteen inch mains until Cottage Street. Side streets such as Railroad Avenue, Cottage Street, Benton Street, and others connecting to Boston Road are serviced by mains ranging in size from six to ten inches in diameter.

Boston Road east of Cottage Street to the Palmer town line is not connected to the Wilbraham public water system. The area along Boston Road east of Cottage Street is primarily residential, with very few commercial establishments. The area is serviced strictly by on-site private wells. There are no connections between the Wilbraham and Palmer water systems.

In Springfield, the water lines are owned and operated by the Springfield Regional Water System. The water system is supplied from several reservoirs including the Cobble Mountain Reservoir in Blandford, Granville and Russell and the Ludlow Reservoir. The Borden Brook Reservoir and the Littleville Reservoir provide

emergency backup supplies. A 16 inch main water line serves the Corridor in Springfield from Breckwood Street to Parker Street. North of Parker Street the pipe size decreases to a 12 inch diameter. Arterial lines serving abutting neighborhoods along the corridor are, for the most part, 8 inch diameter lines.

In a full build-out scenario, the commercial section of Boston Road, has an adequate water capacity to support any new development under the current zoning, according to a 1993 University of Massachusetts corridor study. During peak use periods there were often low pressure problems.

Sewer

Wastewater generated in Wilbraham and Springfield is conveyed to the Springfield Waste Water Treatment Plant at Bondi's Island. Wilbraham's public sewer system services much of the same areas as the water system along the Boston Road corridor, with sewerage from Dudley Street near the Springfield City Line to Cottage Street , with a few exceptions. A small stretch of Route 20 between Dumain Street and Stony Hill Road, the area between Brainard Street east midway to Magnolia Street, Railroad Avenue, and Benton Street are not sewered, although these streets are serviced by public water. Beyond Cottage Street is one of Wilbraham's seven pump stations. From this point east, to the Palmer town line, there are no public sewers. This residential area is serviced entirely by private septic systems.

In the past, Wilbraham treated its own wastewater at its sewage treatment plant, before discharging into the Chicopee River. By 1986, however, treatment requirements exceeded the capabilities of the plant. Wilbraham contracted with the City of Springfield to treat their sewage and converted the Wilbraham treatment plant to a pump station. The Wilbraham and Springfield sewer contract was completed in 1984. Springfield would receive and treat Wilbraham's sewage for a minimum of twenty four years from September 1, 1984. Presently, Wilbraham pumps untreated sewage to Springfield's Regional Wastewater Facility located at Bondi's Island. Wilbraham is now near capacity under the contract with Springfield. In 1991, Wilbraham requested an increase in capacity from Springfield, but the request was denied. Under the current contract, Springfield will receive an average of 300,000 gallons per day and 400,000 gallons per day during peak periods. Biological oxygen demand (BOD) contaminants are limited to 2,000 pounds per day and suspended solids (SS) are limited to a maximum of 2,500 pounds per day. Wilbraham requested an increase to an average of 450,000 gallons per day and 550,000 gallons per day during peak periods and an increase in BOD to 2,200 pounds per day and SS to 2,700 pounds per day.

Flow measurements are taken quarterly at the pump station located on River Road. Measurements show that BOD and SS in Wilbraham's sewage regularly exceeds the contracts maximum allowable levels. Much of this can be related to the commercial volume from the corridor which contains high levels of grease and solids. A town law requires all restaurants to have grease traps installed to prevent large amounts of grease from entering the wastewater stream. Wilbraham is fined when the maximum levels of BOD and SS are exceeded.

Sewer capacity is a formidable barrier to future development along Boston Road in Wilbraham. Springfield requires Wilbraham to obtain a permit for any new development that would add more than 15,000 gallons per day to the sewer system. As of May 1993, the City of Springfield will not issue any such permit to Wilbraham. No permits are required for developments that would add less than 15,000 gallons per day to the sewer system. The 15,000 gallons per day applies to each connection added to the sewer system and not the entire parcel. Therefore, multiple structures on the same parcel could each be allowed sewer connections provided they do not add over 15,000 gallons per day at each connection. The average single family residence averages 330 gallons per day of sewage. Any sizable residential housing development or commercial development can easily exceed the 15,000 gallons per day discharge that requires a sewage permit from Springfield. This issue will have to be resolved if any future large scale development is to occur along the Boston Road corridor, in Wilbraham.

The Town of Wilbraham has no immediate plans to increase capacity in the sewer interceptors. Instead, the town continues to seek an increase in capacity of the contract with Springfield. Wilbraham has also considered another option. The town would like to convert the old treatment plant, which is now a pump station, back to a treatment plant. It would not necessarily have to be a conversion capable of discharge directly into the Chicopee River. It could be a primary treatment plant capable of sending partially treated sewage to Springfield. In effect, this conversion would increase capacity for two reasons. More sewage could be pumped to Springfield since BOD and SS levels would be decreased. The treatment plant could also hold sewage on high volume days and release it on low volume days, so as not to exceed the maximum flow allowed in the contract.

Consulting firms have studied the potential of converting the pump station back to a treatment plant. Presently, the Town of Wilbraham is not likely to finance such improvements. So far, no firm offers have been made by developers to purchase the pump station for the conversion. The town of Wilbraham is, however, optimistic with regard to the sewer capacity problem and hopes it can sell the idea of converting the pump station back to a treatment plant.

According to the Wilbraham Sewer Commission, approximately two-thirds of Wilbraham is served by on-site wastewater disposal systems and the remainder is pumped to Springfield via the River Street Pumping Station. The flow is transported via an 8" force main to Verge Street where a gauge has been installed to measure flow. The wastewater then enters the Springfield sewer system which carries combined sanitary waste and stormwater to the Bondi's Island Waste Water Treatment Plant.

The sewer system in the Springfield section of the corridor is broken down into a number of subsystems which have installed meters that measure flow on a daily basis. The City of Springfield recently hired a consultant to conduct an infiltration/inflow (I/I) study of the entire sewer system to determine where groundwater and stormwater are entering the system. Infiltration is extra water, generally related to the elevation of groundwater, that enters a sewer system from the ground through defective pipes, pipe

joints, connections, and manhole wall. Inflow is extra water discharged into the system from a distinct source, such as sump pumps, roof leaders, cellar drains, foundation drains, surface drains, manhole covers, catch basins, cross-connections with storm drains and cooling water discharges. Inflow is, in most cases, directly related to the quantity of rainfall that a sewerage system experiences. By identifying and eliminating I/I sources the City can increase the capacity and performance of sanitary sewers.

The consultants for the I/I study, Camp Dresser & McKee, Inc., provided the City with flow data for the sewer subsystems. For example, subdrainage area CR which serves the corridor area near Wilbraham, has an estimated 2.410 million gallons per day (MGD) of capacity but rainfall from a 1.86 inch rainstorm on March 29, 1993 produced a measured peak of 1.048 MGD leaving a remaining capacity of 1.362 MGD. While capacity in one subsystem may be adequate, where flow from several subdrainage areas combine, there may be a "weak point" where the sewer capacity is inadequate.

The Springfield DPW has not yet characterized its entire system but is continuing the study to determine where improvements are required. It is not certain at the moment, therefore, whether there is adequate capacity in the system for new development in the Boston Road Corridor. Any measures taken by Springfield to eliminate inflow and infiltration will improve the capacity of the Boston Road sewers to handle discharges from new business. An alternate strategy for new business in the corridor is to build on-site storage capacity for wastewater and discharge during off-peak hours or during dry weather. Friendly's Ice Cream Company, for example, invested in on-site storage and discharges to a Boston Road sewer connection during off-peak hours. A summary of the public utilities along the Boston Road corridor is shown on Figure 2.5-1.

2.52 Land Availability

An inventory of land and/or structures for sale along the corridor was completed by a windshield survey. This inventory can be an indicator of possible change in the land uses of the area. Vacant land which is for sale could, if sold, be developed. Vacant structures which are for sale could be remodeled and reused if sold. Often land that is underutilized is offered for sale. If underutilized land is sold, it could be converted to a more intense land use. (For example, the conversion of a single-family home in a business district to a drive-in ice cream stand.) See Table 2.5-1 for an inventory of land available in the study area.

As of August 1, 1994, there were 15 parcels of land for sale in the study area totaling 43 acres. In Springfield only three parcels with structures were posted for sale. These properties each had less than one acre parcel size and were the sites of former commercial uses. The location of these vacant parcels were:

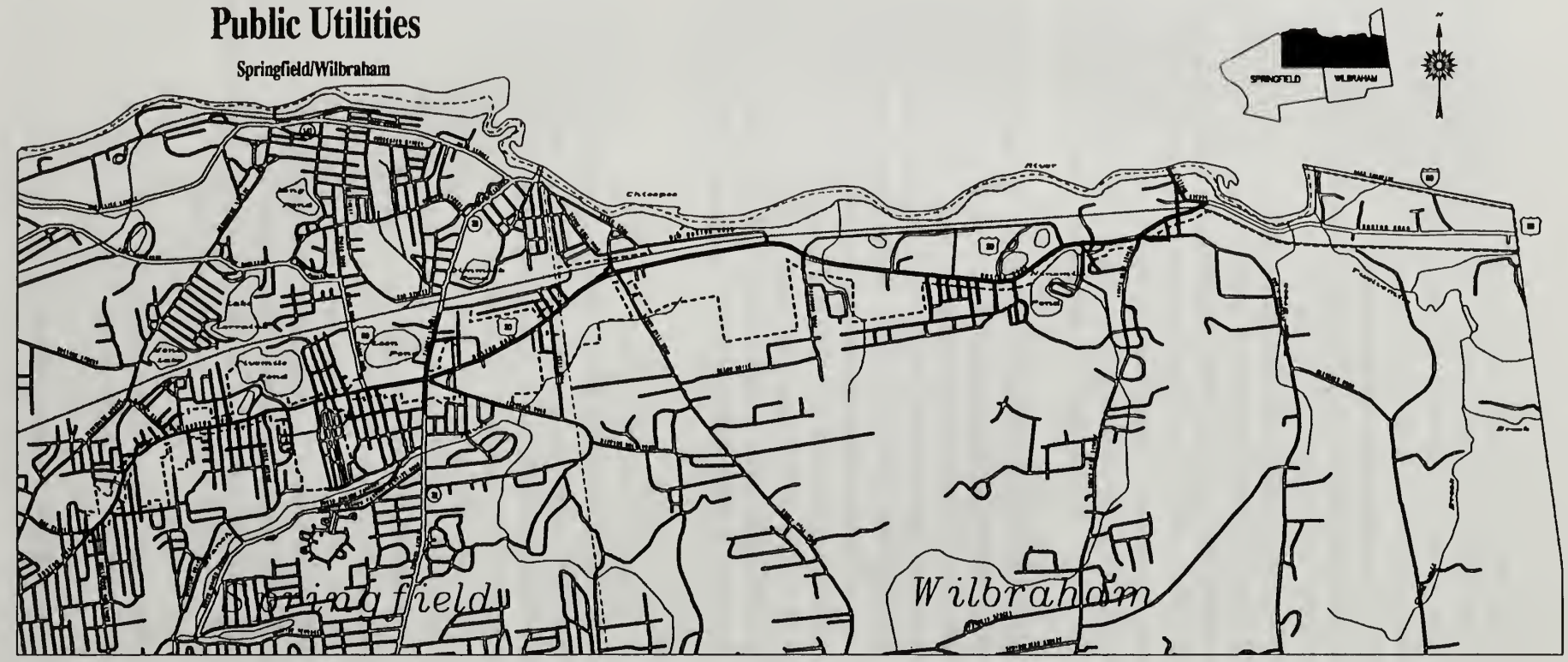
- 2 lots at the intersection of Wilkes Street and Boston Road
- a lot at the intersection of Wallace Street and Boston Road

There are no environmental constraints to develop these Springfield parcels, however, the size of the parcels may constrain the type of future development.

Boston Road Corridor Study

Public Utilities

Springfield/Wilbraham



Study Area Boundary
Public Water Lines
Public Sewer Lines

Sources:

-Springfield Department of Public Works, 1994

-Wilbraham Department of Public Works, 1991

Scale

1/2 0 1 mile

1000 0 8000 feet

Prepared by:

-Pioneer Valley Planning Commission
26 Central Street, West Springfield, MA 01089, August, 1994

in cooperation with:

-Massachusetts Executive Office of Transportation and Construction
-Federal Highway Administration
-Federal Transit Administration

Digital data from:

-Massachusetts Executive Office of Environmental Affairs, MassGIS
-Massachusetts Highway Department
-Pioneer Valley Planning Commission

This map represents the best available data and is for planning purposes only.

Table 2.5-1
Land for Sale in the Boston Road Corridor Study Area
As of August 1, 1994

Municipality	Current Use	No. of Parcels		Lot Size (acre)*
		With Structures	Without Structures	
Springfield	Vacant	3	0	0
Wilbraham	Commercial	2		28.55
	Residential	5		1.5
	Vacant	1	4	13.24
		11	4	43.29

*Anything less than one acre was recorded as having 0 acres.

In Wilbraham there are 11 parcels for sale; 4 vacant parcels and 7 occupied parcels. The commercial properties for sale in Wilbraham are:

- A vacant lot in front of Woodcrest Condominiums at 2207 Boston Road
- The site of W.F. Logan Insurance Agency at 2379 Boston Road
- A vacant lot at 2144 Boston Road across from the former Acura automobile dealer
- The former Acura automobile dealer at 2145 Boston Road
- A vacant lot across from Nine Mile Pond at 2624 Boston Road
- A vacant lot at 2124 Boston Road

There are three large parcels for sale which are zoned for commercial use in the Wilbraham segment of the study area. One of these sites (the former Acura dealership) has structures on it and has 14 acres. Another site (where W.F. Logan Insurance Agency is located) has a structure and 13 acres but the lot is a split zoned lot with a majority of the lot in the Limited Business district rather than in the General Business district. This constraint will limit the type of development that will be attracted to the site. The remaining vacant parcel has 10 acres, is located across from Nine Mile Pond and does appear to have some wetlands which could restrict development

The four residential properties for sale in the Wilbraham section of the study are single-family dwellings.

Although only three parcels for sale were identified in Springfield, it appeared that there were some vacant structures in the Springfield segment of the corridor which were not posted for sale. In Wilbraham there appeared to be some vacant land which was not listed for sale. From the windshield survey, Springfield does not appear to have any undeveloped land and seems to be quite developed, while Wilbraham does have undeveloped land for future new construction. However, there may be more parcels for sale than the windshield survey suggests.

2.60 DEVELOPMENT TRENDS

2.61 Building Permit Activity

Building Permits Issued in the Boston Road Corridor. From 1984 to 1993 there was constant development in the Boston Road Corridor Study Area. A total of 108 building permits were issued in the corridor with 62 issued for the construction of new buildings and 46 issued for additions to existing structures. Total floor area increased by 696,695 square feet. The peak period for the construction of new buildings occurred between the period from 1984 to 1988 in the corridor. In 1989 new construction activity dropped, and did not pick up again until 1992, but at a greatly reduced level than the peak years. *See Table 2.6-1.*

Building Permits in the Corridor by Municipality. Between 1984 and 1993 there were 59 building permits issued, 19 for new construction and 40 for additions, in the Springfield section of the Boston Road Corridor. This accounted for 55 percent of corridor-wide building activity. With the exception of one permit for expansion of a mobile home, all of the permits were for commercial development. *See Table 2.6-2.*

In Wilbraham, 49 building permits were issued, 43 for new construction and 6 for additions to existing structures, accounting for 45 percent of corridor building activity. Of the Wilbraham permits, 43 percent were for commercial development, while 47 percent were for residential development. A majority of the residential buildings issued along the corridor (65 percent) were for the development of Woodcrest Condominiums. *See Table 2.6-3.*

Commercial Development in the Corridor. The majority of building permits issued for new construction in the corridor were for commercial dwellings. Fifty-five percent (55%) of the building permits issued for new construction were for commercial development, while 37 percent were issued for the construction of residential dwellings. Between 1984 and 1993 commercial floor space increased by 610,972 square feet (88 percent) and residential floor space increased by 58,134 square feet (8%). *See Table 2.6-1.*

The importance of the Boston Road Corridor Study Area as a commercial center to Wilbraham and Springfield can be illustrated by comparing the building permits issued in the corridor study area with those issued in each of the two communities. Of the 111 building permits issued for new commercial development in the City of Springfield from 1984 to 1993, 31 percent were issued in the corridor study area. See Table 2.6-4 for information about building permit activity for all of Springfield from 1984 to 1993. In Wilbraham, of the 49 commercial permits issued townwide, 31 percent were in the corridor. See Table 2.6-5 for information about the building permit activity for all of Wilbraham from 1984 to 1993. Not only was there new commercial development in the corridor, but many existing businesses expanded their businesses. Forty-six building permits for additions were issued in the corridor, another indicator of a flourishing commercial corridor.

Table 2.6-1

Building Permit Activity 1984-1993
The Boston Road Corridor Study Area

Year	Total # of Permits/New Construction	Total # of Permits/ Additions	# of Permits/New Construction by Land Use Type				# of Permits/Additions by Land Use Type				Total Increase in Floor Area (sq. ft.)	Increase in Floor Area by Land Use Type			
			Res.	Com.	Ind.	Inst.	Res.	Com.	Ind.	Inst.		Res.	Com.	Ind.	Inst.
1984	7	5	1	6	0	0	0	5	0	0	29,422	6,063	23,359	0	0
1985	8	7	6	2	0	0	0	7	0	0	53,905	34,956	18,949	0	0
1986	12	13	5	7	0	0	0	13	0	0	131,777*	6,773*	125,004	0	0
1987	8	5	6	2	0	0	0	5	0	0	25,872*	2,880*	22,992	0	0
1988	12	4	4	4	2	2	0	4	0	0	83,417*	4,767*	58,286	12,000	8,364
1989	4	3	0	4	0	0	0	3	0	0	28,766	0	28,766	0	0
1990	3	2	0	3	0	0	0	2	0	0	100,978	0	100,978	0	0
1991	2	0	0	1	1	0	0	0	0	0	8,281	0	1,056	7,225	0
1992	2	4	0	2	0	0	1	3	0	0	17,437	550	17,437	0	0
1993	4	3	1	3	0	0	0	3	0	0	216,840	2,145	214,695	0	0
Total	62	46	23	34	3	2	1	45	0	0	696,695*	58,134*	610,972	19,225	8,364

*Incomplete data

Table 2.6-2

Building Permit Activity 1984-1993
The Portion of the Boston Road Corridor Study Area in Springfield

Year	Total # of Permits/New Construction	Total # of Permits/ Additions	# of Permits/New Construction by Land Use Type				# of Permits/Additions by Land Use Type				Total Increase in Floor Area (sq. ft.)	Increase in Floor Area by Land Use Type			
			Res.	Com.	Ind.	Inst.	Res.	Com.	Ind.	Inst.		Res.	Com.	Ind.	Inst.
1984	6	5	0	6	0	0	0	5	0	0	23,359	0	23,359	0	0
1985	2	7	0	2	0	0	0	7	0	0	18,949	0	18,949	0	0
1986	5	10	0	5	0	0	0	10	0	0	119,688	0	119,688	0	0
1987	1	4	0	1	0	0	0	4	0	0	15,484	0	15,484	0	0
1988	0	4	0	0	0	0	0	4	0	0	2,434	0	2,434	0	0
1989	0	3	0	0	0	0	0	3	0	0	2,846	0	2,846	0	0
1990	0	2	0	0	0	0	0	2	0	0	4,079	0	4,079	0	0
1991	1	0	0	1	0	0	0	0	0	0	1,056	0	1,056	0	0
1992	1	3	0	1	0	0	1	2	0	0	16,725	550	16,157	0	0
1993	3	2	0	3	0	0	0	2	0	0	214,331	0	214,331	0	0
Total	19	40	0	19	0	0	1	39	0	0	418,951	550	417,833	0	0

Source: Springfield Building Inspector's Office

Table 2.6-3

Building Permit Activity 1984-1993
The Portion of the Boston Road Corridor Study Area in Wilbraham

Year	Total # of Permits/New Construction	Total # of Permits/ Additions	# of Permits/New Construction by Land Use Type				# of Permits/Additions by Land Use Type				Total Increase in Floor Area (sq. ft.)	Increase in Floor Area by Land Use Type			
			Res.	Com.	Ind.	Inst.	Res.	Com.	Ind.	Inst.		Res.	Com.	Ind.	Inst.
1984	1	0	1	0	0	0	0	0	0	0	6,063	6,063	0	0	0
1985	6	0	6	0	0	0	0	0	0	0	34,956	34,956	0	0	0
1986	7	3	5	2	0	0	0	3	0	0	12,089*	6,773*	5,316	0	0
1987	7	1	6	1	0	0	0	1	0	0	10,388*	2,880*	7,508	0	0
1988	12	0	4	4	2	2	0	0	0	0	80,983*	4,767*	55,852	12,000	8,364
1989	4	0	0	4	0	0	0	0	0	0	25,920	0	25,920	0	0
1990	3	0	0	3	0	0	0	0	0	0	96,899	0	96,899	0	0
1991	1	0	0	0	1	0	0	0	0	0	7,225	0	0	7,225	0
1992	1	1	0	1	0	0	0	1	0	0	1,280	0	1,280	0	0
1993	1	1	1	0	0	0	0	1	0	0	2,509	2,145	364	0	0
Total	43	6	23	15	3	2	0	6	0	0	278,312*	57,584*	193,139	19,225	8,364

*Incomplete data
Source: Wilbraham Building Inspector's office

Table 2.6-4
Building Permit Activity 1984 - 1993 - City of Springfield

Number of Permits/New Construction by Land Use Type

Year	Residential	Commercial	Industrial	Other Non-Residential	Total
1984	176	17	4	3	200
1985	275	8	7	10	300
1986	351	21	21	13	406
1987	490	1	4	6	501
1988	478	18	4	11	511
1989	406	8	2	10	426
1990	165	12	0	32	209
1991	155	13	0	33	201
1992	106	8	5	16	135
1993	71	5	5	16	97
TOTAL	**2,673**	**111**	**52**	**150**	**2,986**

Source: Bureau of the Census, MISER, University of Massachusetts, Amherst

Table 2.6-5
Building Permit Activity 1984 - 1993 - Town of Wilbraham

Number of Permits/New Construction by Land Use Type

Year	Residential	Commercial	Industrial	Other Non-Residential	Total
1984	67	8	1	2	78
1985	100	3	1	2	106
1986	152	22	1	0	175
1987	121	1	2	2	126
1988	52	9	2	2	65
1989*	33	3	0	1	37
1990*	5	0	0	1	6
1991	31	2	0	1	34
1992	33	0	0	2	35
1993	26	1	0	2	29
TOTAL	**620**	**49**	**7**	**15**	**691**

Sources: William Garvey, Wilbraham Building Inspector

Incomplete Data: 1989, January - November; 1990, July - December; 1991, January - September

Residential Development in the Corridor. Also both Springfield and Wilbraham have experienced commercial expansion in the Boston Road Corridor, the two communities have diverged on the rate of residential development. In the Wilbraham segment of the corridor, 23 permits were issued for new residential development. In Springfield, only one permit was issued for an addition to an existing residence in the corridor.

Wilbraham has had more recent residential development along Boston Road than Springfield. However, most of the residential development along the corridor was concentrated in one development, the Woodcrest Condominiums. Traditionally, the type of housing developed in along the corridor Wilbraham has been single-family residential. The construction of Woodcrest Condominiums change the nature of this development, by consolidating housing in one area rather than spreading the housing out along the corridor. Although it is significant that some residential development occurred in the Wilbraham segment of the corridor, it must be noted that the residential development that occurred along the corridor represented only 4 percent of the total number of building permits issued for new residential development in the entire town of Wilbraham. Most of the recent growth with the Wilbraham segments of the Boston Road corridor study area has been for non-residental land uses.

Building Permit Activity Map. Attached at the end of Section 2.60 is a Building Permit Activity Map shown on Figure 2.6-1.

2.62 Proposed Development

Springfield

Wal-Mart recently constructed a 117,050 square foot discount department store at the site of the former Show-Off Plaza located at 1101 Boston Road. The 1992 redevelopment proposal anticipated the construction of an additional 102,550 square feet of retail space in 1995. This represents the largest of the proposed developments in Springfield.

Three other developments currently proposed for the Boston Road Corridor will not add a significant amount of new floor area in the corridor. Circuit City, a national retailer of home and automobile electronic products, now occupies part of the former Edwards Food Store building located at the intersection of Boston Road and Parker Street.

A restaurant called "The Olive Garden" has located at the site of a previous Mexican food restaurant. Neither of these developments add significant floor area to the Boston Road Corridor.

The Big Y store recently opened at the former Zayre site at the intersection of Boston Road and Cobb Street. The supermarket occupies 94,530 square feet of a shopping center which has been proposed to include a total of 96,575 square feet. An additional 2,045 square feet will be added in the future.

Wilbraham

Wilbraham officials are examining the suitability of an area between the intersections of Brainard Road, Forest Street and Manchonis Road for a professional medical complex and life care facility. The discussion has not yet proceeded to the point where a developer has formally advanced a project development proposal for the area.

The long term feasibility of sizable new development projects in Wilbraham is constrained by limitations on sewage treatment capacity. Wilbraham currently pumps sewage effluent to the Bondi's Island sewage treatment facility operated by the City of Springfield. Under the current contract between Wilbraham and Springfield, Wilbraham may only increase their effluent flow to Bondi's Island by 50,000 gallons per day. A single large commercial or retail facility could require between 30,000 and 50,000 gallons per day of sewage treatment capacity.

2.63 Visual Characteristics

As previously discussed, there are many types of existing land uses found in the Boston Road corridor. *See Section 2.30 for a discussion about existing land uses.* Each type of land use usually has its own visual style which leaves some sort of impression on the motorist as he drives through the corridor. For example, each business or retail use along the corridor strive to draw the motorist's attention to the site by its use of signage, architecture, building placement, and access to and from the site. In the case of residential developments along the highway, the motorist does not usually pay attention to the individual homes. However, the motorist's eye may be drawn to them if the residential development provide greenery along an otherwise heavily developed corridor.

When traveling east to west along the Boston Road corridor through Wilbraham, the motorist notices the following:

- a view of suburban residential homes, some vegetation and the Chicopee River (from the Palmer/Wilbraham town line to the intersection of Boston Road and Cottage)

- an area dominated by gas stations and other small businesses (from the intersection of Boston Road and Cottage Street to the intersection of Boston Road and Main Street)

- a mix of small businesses and residential homes (from the intersection of Boston Road and Main Street to the intersection of Boston Road and Forest Street)

- many free-standing business developments, most developed in the traditional commercial strip style (from the intersection of Boston Road and Forest Street to the Wilbraham/Springfield municipal boundary)

When traveling east to west along the Boston Road corridor through Springfield, the motorist notices the following:

- large shopping centers (from the Wilbraham/Springfield municipal boundary to the intersection of Boston Road and Parker Street)

- intensely developed, freestanding buildings (from the intersection of Boston Road and Parker Street and the intersections of Boston Road, Jamaica Street, and Fieldstone Street)

- large strip mall shopping centers mixed with some park vegetation (from the intersections of Boston Road, Jamaica Street, and Fieldstone Street to the intersections of Boston Road, Stuart Street, and Gilbert Avenue)

- a mix of residential structures and high-intensity service related businesses (from the intersections of Boston Road, Stuart Street, and Gilbert Avenue to the intersection of Boston Road and Breckwood Boulevard)

Both the Boston Road Corridor Advisory Committee and the Pioneer Valley Planning Commission staff have suggested that the visual impact of the less attractively developed areas of the highway may leave a more lingering impression of the corridor. The visual characteristics of a corridor are remembered by the motorist in conjunction with the existing land use areas. The following visual elements along the Boston Road Corridor may influence how the motorist perceives the corridor:

- Many wide curb cuts along the corridor. The width of the curb cuts may be distracting for motorists, for they must always be on guard for vehicles entering or existing the corridor at any point instead of at clearly defined points.

- The lack of adequate landscaping and buffering for large-scale multi-use development (e.g. shopping malls). This leads to the impression of these uses as being located in a sea of pavement.

- The lack of landscaping or buffering for small businesses along the corridor. The lack of vegetation on these smaller lots also contributes to the impression of a sea of asphalt along the corridor.

- The visual clutter of signs. In Springfield, many signs are too big, too tall and not sufficiently placed for the motorist to read. In Wilbraham, the signs for multi-use buildings contain too much information and the motorist cannot read them.

2.64 Development Suitability of Undeveloped Land

Vacant Land

An analysis was done on all vacant land parcels to determine those suitable for development. This analysis evaluated environmental characteristics of the property such as slope, wetlands, and floodplain. Four categories of vacant land were mapped: (1) vacant land with no development constraints, (2) vacant land with mild constraints, (3) vacant land with moderate constraints, and (4) vacant land with severe constraints. See Development Suitability Map, shown on Figure 2.6-2 at the end of Section 2.6.

Segment 1. Segment 1 of the Development Suitability Map runs from Breckwood Boulevard to Harvey Street in Springfield. It is the smallest segment of the corridor with only 56 acres of total land area. Eleven and one-half percent (11.5%), or 6.5 acres, is undeveloped land. A majority of the undeveloped land with no development constraints has no frontage on Boston Road and is back a great distance from Boston Road. There are no development constraints on 4.5 acres of the available land in the segment, while 2 acres of available land have moderate constraints to development.

Segment 2. Segment 2 of the Development Suitability Map incorporates Harvey Street to Kent Street in Springfield and has 328 acres of total land area. A total of 17 acres is undeveloped land, and a majority of undeveloped land (13 acres) has no physical constraint to development. Only two acres has moderate development constraints, while the remaining two acres have severe constraints for development.

Segment 3. Segment 3 of the Development Suitability Map goes from Kent Street in Springfield to Stony Hill Road in Wilbraham. Twenty-eight acres (36 %) of the seventy-eight acres of the total land area is undeveloped land. Half of the undeveloped land (14 acres) has no constraints to development, while the other half (14 acres) has moderate development constraints. All of the undeveloped land in Segment 3 has no frontage along Boston Road and most of it is located to the south of Boston Road behind existing businesses (including Friendly headquarters).

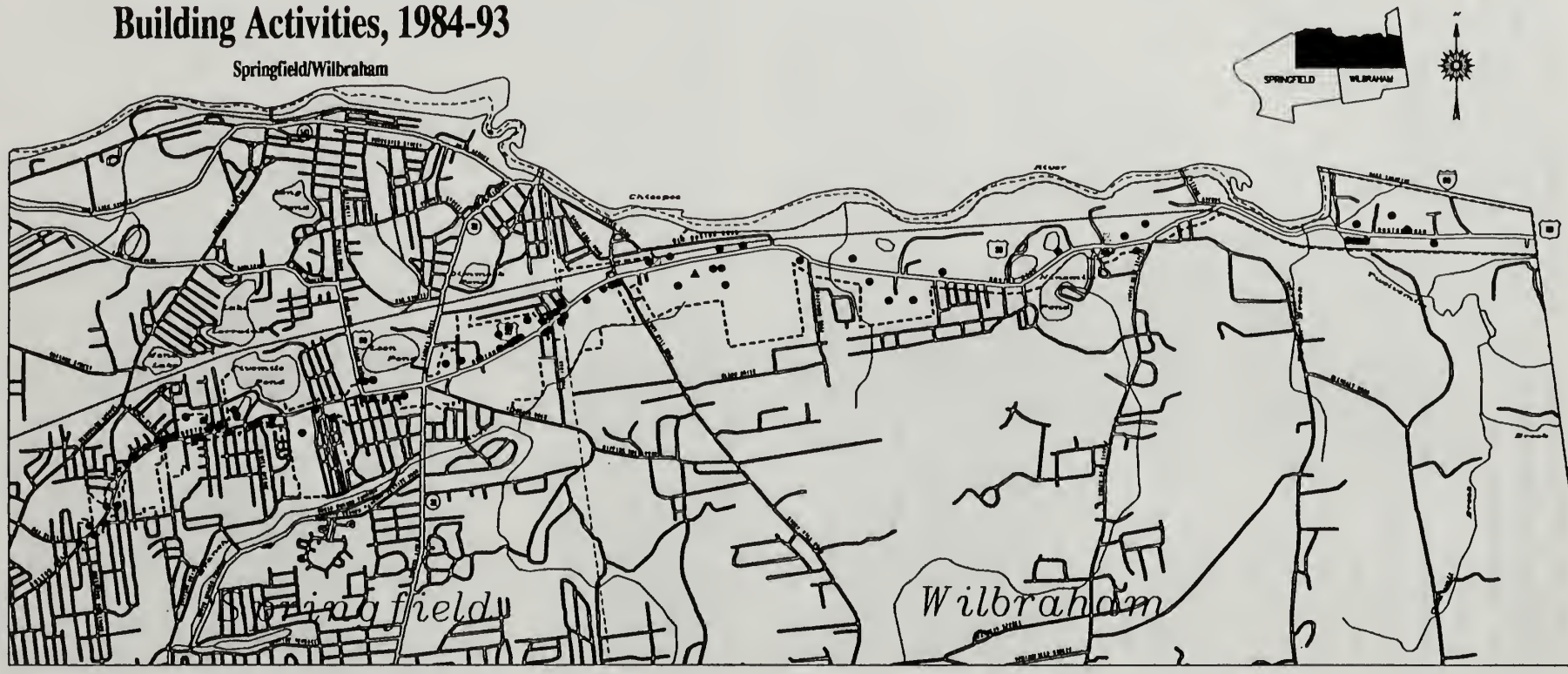
Segment 4. Segment 4 of the Development Suitability Map runs from Stony Hill Road to Cottage Avenue in Wilbraham. With 736 acres, Segment 4 is the largest segment of the corridor. Approximately thirty-eight percent (38%), or 279 acres, is undeveloped land. A majority of the undeveloped land (76 % or 212 acres) have no physical constraints to development. There are three large areas of undeveloped land without any development constraints in this segment. One area is the land surrounding the Wilbraham post office. Another area is located on the west side of Railroad Avenue. The remaining area is immediately southwest of the post office, to the south of Boston Road. Eight acres have mild development constraints and twenty-seven acres have moderate development constraints. Only eleven percent (11%) or thirty-two acres of undeveloped land have severe constraints for development. Most of the severely constrained land is adjacent to the Chicopee River and includes the Chicopee River floodplains.

Segment 5. Segment 5 of the Development Suitability Map proceeds from Cottage Avenue to the Wilbraham/Palmer town line. There are 223 acres in Segment 5 and 99 acres (44 %) are undeveloped acres. A majority (73%) of the undeveloped land in the area has no constraints to development. Ten acres of undeveloped land has mild constraints and six acres are moderate constraints for development. Only ten percent (10 acres) have severe constraints to development.

Boston Road Corridor Study

Building Activities, 1984-93

Springfield/Wilbraham



- Study Area Boundary
- Building Addition
- New Construction
- Demolition
- Remodeling

Sources:

-Springfield Building Inspectors Office, Building Permits, 1984 -1993

-Wilbraham Building Inspectors Office, Building Permits, 1984 -1993

Scale

1/2 0 1 mile

1000 0 6000 feet

Prepared by:

-Pioneer Valley Planning Commission
26 Central Street, West Springfield, MA 01089, August, 1994

in cooperation with:

-Massachusetts Executive Office of Transportation and Construction
-Federal Highway Administration
-Federal Transit Administration

Digital data from:

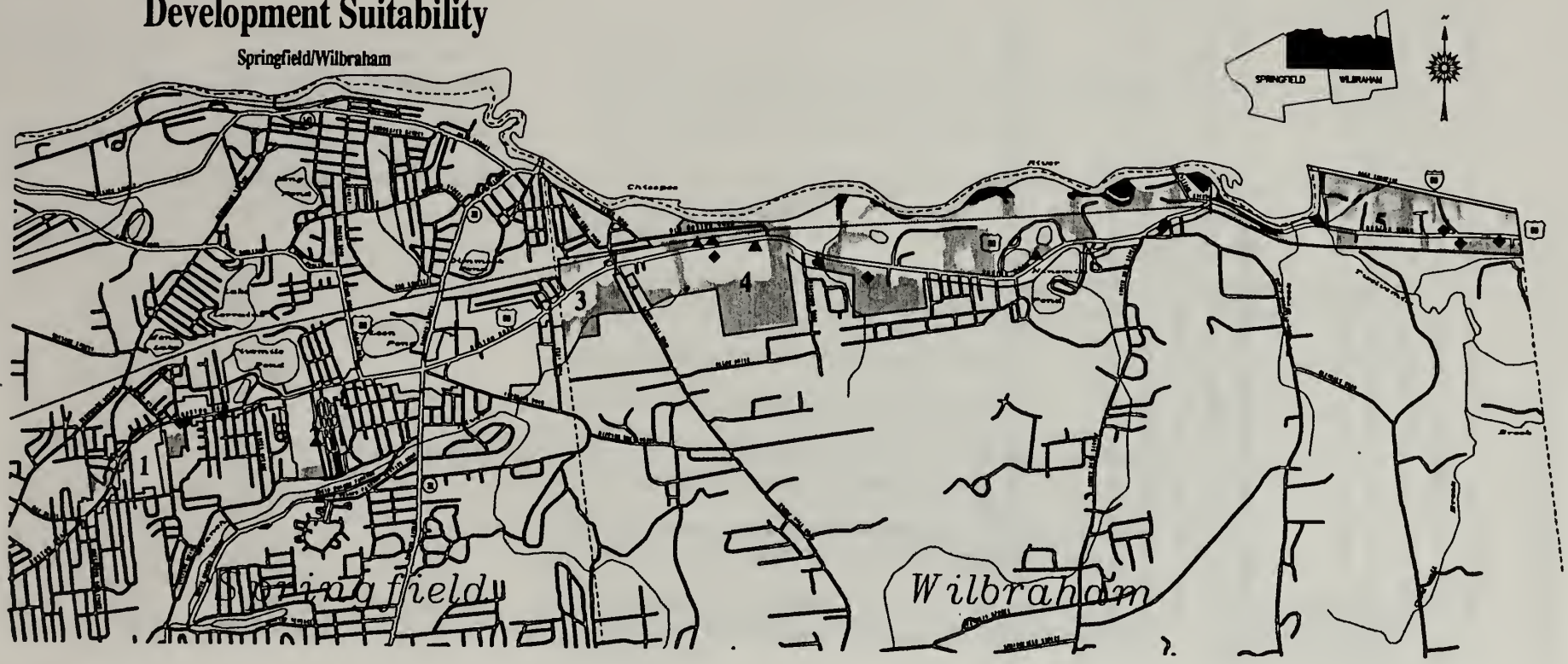
-Massachusetts Executive Office of Environmental Affairs, MassGIS
-Massachusetts Highway Department
-Pioneer Valley Planning Commission

This map represents the best available data and is for planning purposes only.

Boston Road Corridor Study

Development Suitability

Springfield/Wilbraham



- Severe Constraint
- Moderate Constraint
- Minimal Constraint
- No Constraints
- Developed / Committed
- Structures For Sale
- Undeveloped Land For Sale

Sources:

–National Wetlands Inventory Maps, Springfield North and Ludlow Quads, U.S. Department of the Interior, Fish and Wildlife Service, October, 1975

–Flood Insurance Rate Maps, Federal Emergency Management Agency
City of Springfield, MA.–June 17, 1991
Town of Wilbraham, MA., June 15, 1988

–Interpretation of the Springfield North and Ludlow USGS Topographic Quadrangles, 1979 and 1975, Pioneer Valley Planning Commission, 1994

–Massachusetts Executive Office of Environmental Affairs, MassGIS, 1990

–Field Verification, Pioneer Valley Planning Commission, September, 1994

Scale

1/2 0 1 mile

1000 0 8000 feet

Prepared by:

–Pioneer Valley Planning Commission
26 Central Street, West Springfield, MA 01089, August, 1994

in cooperation with:

–Massachusetts Executive Office of Transportation and Construction
–Federal Highway Administration
–Federal Transit Administration

Digital data from:

–Massachusetts Executive Office of Environmental Affairs, MassGIS
–Massachusetts Highway Department
–Pioneer Valley Planning Commission

This map represents the best available data and is for planning purposes only.

2.70 ALTERNATE LAND USE STRATEGIES

All across the United States, communities are struggling with common problems: controlling the traffic and aesthetic impacts of commercial strip development and reducing the conflicts between commercial and residential development. Clearly, there is no simple solution, but communities have been successful in combining various elements of traffic, access and development management into multi-faceted commercial corridor programs.

In developing a series of alternate land use strategies, PVPC investigated a wide range of alternatives. Many of these alternatives are based upon the strategies and experiences of communities across the United States in controlling traffic volumes and commercial strip development along highway corridors. Other alternatives are more conceptual, and are linked to the unique problems and opportunities presented by the Boston Road Corridor.

The Complete package of options is contained in the following section, in Table 2.7-1 "Alternative Land Use Strategies".

Table 2.7-1
Alternative Land Use Strategies

Issue	Goal	Strategies/Options	Examples (Bylaw or Policy Implemented)
• Controlling Traffic Impacts	• Reduced traffic generation by controlling form and type of development	• COMMERCIAL CORRIDOR SITE PLAN APPROVAL - Establish a commercial corridor overlay zone requiring site plan approval for all non-residential uses. Approval criteria can be designed to promote planned unit or clustered business development	Canton, Massachusetts Citrus County, Florida
	• Encourage clustering of business to minimize curb cuts	- Require developer to demonstrate that proposed project will minimize traffic impacts by using single driveways or cul-de-sacs roads for multiple businesses	Loudon County, Virginia
		- Require traffic impact statement for large developments describing measures necessary to preserve traffic-bearing capacity of roads	Savannah, Georgia Westport, Connecticut
		- Require that open space preservation be maximized	El Segundo, California
		- Encourage the concentration of complimentary uses	Austin, Texas
	• Encourage pedestrian and bicycle use	- Require pedestrian and bicycle circulation enhancements, improvements in access points for transit, and parking lot design	Ashland, Oregon
		- Provide adequate bicycle parking and storage, and safe and pleasant facilities such as showers and lockers at work destination sites	
	• Reduce traffic impacts of new development	• TRIP REDUCTION ZONING - Require development of strategies designed to reduce traffic impact of a proposed project	Cambridge, Massachusetts Chapel Hills, North Carolina Agoura Hills, California
	• Reduce traffic volumes • Link commercial development to one-site housing	• PLANNED UNIT DEVELOPMENT - Establish use intensity regulations (floor area ratios) - Create incentives for or require on-site housing - Require on-site and off-site transportation improvements	Reading, Massachusetts Santa Monica, California Sacramento County, California

Table 2.7-1(cont.)
Alternative Land Use Strategies

Issue	Goal	Strategies/Options	Examples (Bylaw or Policy Implemented)
• Controlling Traffic Impacts (cont.)	• Reduce traffic volumes	• MIXED USE DEVELOPMENT - Allow mixed use developments (MXD) containing three or more kinds of land uses. MXDs combine several different elements: street design, pedestrian and bicycle facilities, mixed housing types and densities, open spaces, stores, offices, light industries, and transit. - Provide pedestrian and bicycle circulation systems separate from motorized vehicle roads - Walkways and bikeways should include benches, landscaping, lighting, public open spaces and easy access to transit. - Provide mixed residential densities, types and costs (clustered single family, multiplex, townhouse) - Access to transit and commercial activities for walkers (and bikers) is crucial - Create a grid pattern in any streets to promote alternative paths - Commercial and service uses must have varying intensities based on their location within the development and the type of use.	Sacramento, California Portland, Oregon King County, Washington
• Controlling Types of Uses	• Limit business uses to those which generate lower traffic volumes	• PROHIBIT OR RESTRICT HIGH TRAFFIC GENERATING USES - Prohibit or restrict uses which generate highest volumes traffic including fast-food restaurants, supermarkets, large shopping centers, large office buildings, gas stations, and convenience stores • DOWNZONING OR RE-ZONING Re-zoning highway properties to a less intensive use or increase lot sizes	Fairfax County, Virginia

Table 2.7-1 (cont.)
Alternative Land Use Strategies

Issue	Goal	Strategies/Options	Examples (Bylaw or Policy Implemented)
• Controlling Types of Uses (cont.)	• Establish development standards for high-volume traffic generators	• ESTABLISH DEVELOPMENT STANDARDS FOR DRIVE-THROUGH FACILITIES	
		- Provide supplemental standards for drive-through facilities to ensure protection from potential traffic hazards	Largo, Florida
• Controlling Location of Uses	• Focus high intensity uses at appropriate locations	• DIVIDE COMMERCIAL CORRIDOR INTO MULTIPLE DISTRICTS	
		- Establish separate districts for high intensity and lower intensity commercial uses	Carlsbad, California York, Maine
		- Provide option for transfer of development rights	
		- Restrict high intensity uses to modes or clusters, such as a major intersections	
		- Establish guidelines regarding maintenance and periodic inspection of driveway approaches. Establish penalties for driveways in violation of the curb cut permit	League of Oregon Cities
		- Concurrently review building permits and driveway permits Clearly identify traffic access issues	Institute of Transportation Engineers
	• Eliminate uncontrolled access	• INSTALL VERTICAL CURBS	
		- Install vertical curbs on entire length of right-of-way	New Orleans, Louisiana
• Growth Rate	• Phase in traffic impacts of commercial growth over time	• PHASED GROWTH BYLAW	
		- Establish annual limit on commercial building permits, linked to highway capacity	Hadley, Amherst, Massachusetts
• Density Control	• Reduce traffic generation	- Increase minimum lot size for business uses (i.e. 60,000 s.f.)	Rehoboth, Westminster, MA
	• Encourage consolidation of land parcels	- Increase frontage requirements	

Table 2.7-1 (cont.)
Alternative Land Use Strategies

Issue	Goal	Strategies/Options	Examples (Bylaw or Policy Implemented)
• Density Control (cont.)	• Encourage clustering of businesses	- Allow reduced lot sizes and frontage requirements through planned unit development, via Special Permit	
• Open Space Preservation	• Preserve "green spaces" between business districts to promote highway safety and clustering of business uses	• LAND ACQUISITION - Apply for MDPW grant funds to purchase selected land parcels	Gloucester, Beverly, MA
		• PERFORMANCE ZONING - Establish performance standards for commercial development in order to determine whether an intersection can accommodate a small, medium or large project.	Manatee County, Florida
		• RESTRICT LOCATION TO MAJOR INTERSECTION - Restrict commercial and office uses to major intersections along the corridor, extending no further than 2,000 feet from major intersections	Carlsbad, California
• Conversion of Residences to Business Use	• Control conversion of existing residences to business	• RESIDENTIAL CONVERSION BYLAW - Establish increased minimum lot sizes for business uses, and provisions for change of use from residential to commercial	Taunton, Massachusetts
		- Restrict construction to one principal building per lot	
		- Recommend low intensity commercial use for developable parcels in transitional areas (transition from residential to commercial use)	Charleston County and Dorchester County, S. Carolina
• Access Control	• Limit curb cuts to improve highway safety	• COMPREHENSIVE ACCESS CONTROL POLICY - Establish new MDPW curb cut permit policy for new businesses or change of use in existing residential or business uses, requiring: Correction of existing access problems	

Table 2.7-1 (cont.)
Alternative Land Use Strategies

Issue	Goal	Strategies/Options	Examples (Bylaw or Policy Implemented)
• Access Control (cont.)		Require minimum distance between curb cuts	Savannah, Georgia
		Require minimum curb cut distance from intersections	
		Require new uses to integrate access, circulation and parking with adjoining properties	
		Limit curb cuts to one per business, except in special circumstances	
		Require access on side roads, or frontage roads, if available	Granby, Massachusetts
		Circulation to be designed so that internal access will minimize need for frequent use of arterial highway	Forest Grove, Oregon
		Frontage loop roads, common driveways to be encouraged	
		Require parallel service drives as an alternative to the individual curb cuts for each parcel. A service drive can serve multiple lots.	Rensselaer County, New York
		For already developed parcel subject to random redevelopment, develop a redevelopment strategy requiring the correction of existing access problems before a business license or building permit is issued.	Forest Grove, Oregon
		- Require minimum visual buffer standards along the corridor of right-of-way	Hilton Head, South Carolina
		- Establish tree protection standards	Southern Beaufort County, SC
		- Establish a Parkway District, incorporating special design features into a property entries with vehicular access	Jupiter, Florida
		- Develop flexible buffer standards based on the compatibility of adjacent uses rather than the district location of the use	Prince George's County, MD
		- Give credits for the preservation of existing woodlands	Raleigh, North Carolina
		- Control height and placement of exterior lights	
		- Prevent the disturbance of existing natural landscaping within 25 feet of the property line that adopts the street right-of-way.	Sante Fe, New Mexico

Table 2.7-1 (cont.)
Alternative Land Use Strategies

Issue	Goal	Strategies/Options	Examples (Bylaw or Policy Implemented)
• Access Control (cont.)		- Require applicants for new construction, additions or remodeling (value of over $10,000) along the corridor shall meet the standards for landscaping before a building permit is issued.	Sante Fe, New Mexico
		- Provide a tree-lined parkway on both sides of the right-of-way	Charleston County & Dorchester County, South Carolina
		- Trees interspersed with low-growing vegetation or grass should visually predominate over impervious surface	Portland, Oregon
		• HIGHWAY BEAUTIFICATION - Apply for state grant to undertake landscaping highway right-of-ways. Establish local "beautification committee"	
• Parking	• Improve safety and aesthetics of parking areas	• PARKING STANDARDS - Establish standards for parking including:	
		- Required number of spaces and dimensions	Granby, Massachusetts
		- Required landscaping to screen parking from street or residential uses	Colorado Springs, Colorado Pima County, Arizona
		- Require perimeter landscaping between adjacent parking lots	Prince George's County, MD
		- Require interior parking lot landscaping	Prince George's County, MD
		- Require a minimum size for all parking islands	Fairfax County, Virginia
		- Parking to be located at side or rear of building	
		- Promote shared parking areas between adjacent business	
		- Restrict parking from front yard requirements	Colorado Springs, Colorado
		- Require interior traffic and pedestrian circulation plan for large developments	
		- Driveway standards designed to minimize traffic impacts	Rensselaer County, New York

Table 2.7-1 (cont.)
Alternative Land Use Strategies

Issue	Goal	Strategies/Options	Examples (Bylaw or Policy Implemented)
• Parking (cont.)		- Set a maximum area for parking lots to avoid overbuilding (may require transit amendments or sharing of lots)	Bellevue, Washington Portland, Oregon
• Sign Control	• Control signs to protect community character, enhance traffic safety	• SIGN ORDINANCE - Limit number of signs per business	New Orleans, Louisiana
		- Limit sign size, based upon size of building - Establish standards for sign materials, light placement - Limit sign information to business name, address	
		- Establish maximum height	Boulder, Colorado
		- Ban temporary free-standing signs - Ban billboards	Montgomery County, Maryland
		- Require removal of non-conforming signs within 3 years	New Orleans, Louisiana
		- Provide for enforcement with system of tickets for offenders	Champaign, Illinois
		- The maximum size of wall signs is regulated on the basis of street-side building width and/or width of building area occupied by the individual tenant	Jefferson Parish, Louisiana
		- Require an integrated sign system design for all new commercial subdivisions, office complexes and shopping centers	Hilton Head, South Carolina
		- Establish special sign overlay district to address the specific concerns of signs along commercial strips	Jupiter, Florida
• Design/Appearance	• Control business appearance to protect community character, improve attractiveness of business	• DESIGN REVIEW/APPEARANCE CONTROLS - Require design review as part of site plan approval process for all non-residential uses	Boca Raton, Florida Amherst, Massachusetts
		Establish Design Review Board and design standards for: • Architectural design • Landscaping and screening	Savannah, Georgia
		- Establish appropriate setback requirements with no parking permitted in required front yards	Granby, Massachusetts
		- Review streetscape improvements and external changes as part of design review	Hilton Head, South Carolina

Table 2.7-1 (cont.)
Alternative Land Use Strategies

Issue	Goal	Strategies/Options	Examples (Bylaw or Policy Implemented)
• Landscaping	• Improve overall appearance of highway corridors, screen objectionable uses	• ZONING STANDARDS FOR LANDSCAPING	
		- Establish performance standards for landscaping element	Pima County, Arizona
		- Require landscaping of a minimum front yard area	Colorado Springs, Colorado
	• Provide uniform standards for development and maintenance of landscaping	- Require a buffer between commercial and residential area	
		- Require screening of loading areas, equipment areas, etc.	Thornton and Westminster, CO
		- Require landscaping for existing uses planning to expand by more than 25% of gross floor area	Granby, Massachusetts Pima County, Arizona
		- Require maintenance of landscaping	New Hanover, North Carolina
		- Require data on drainage flow in site plan	
		- Establish off-street loading requirements	Pima County, Arizona
		• DEVELOP DRIVEWAY SPACING REGULATIONS	
		- Set minimum spacing standards based on arterial highway operating speeds	Lansing, Michigan
• Pedestrian/Bicycle Access	• Promote pedestrian and bicycle access to business to reduce a need for driving to individual businesses	• ZONING FOR PEDESTRIAN BICYCLE ACCESS	
		- Promote clustering of businesses via site plan	
		- Require paved access routes to bikeway, if adjacent to right-of-way	
		- Require sidewalks	
		- Provide sidewalks and pathways through larger developments with landscaping	Portland, Oregon
		- Orient structures and parking areas to facilitate access for pedestrians between adjacent uses	Portland, Oregon
• Corridor-wide Improvement Projects	• Reduce traffic volumes	- Establish commuter bike lanes to facilitate travel from nearby residential areas.	Seattle, Washington Tucson, Arizona Portland, Oregon
		- Establish park and ride facilities	1

Table 2.7-1 (cont.)
Alternative Land Use Strategies

Issue	Goal	Strategies/Options	Examples (Bylaw or Policy Implemented)
• Costs/Financing	• Provide method of financing necessary infrastructure improvements in highway corridors	• IMPACT FEES FOR TRIP GENERATION - Establish system of road impact fees, based upon amount of traffic generated by businesses, to pay for costs of public infrastructure improvements and town inspection services	Seattle, Washington DuPage, Lake Counties, Illinois
		• LANDSCAPING FEES - Develop a landscape fee to finance installation of right-of-way and medians plantings	Thornton and Westminster, CO
		• REVENUE SHARING - As part of an intergovernmental memorandum of agreement divide all tax revenues collected between member communities	Thornton and Westminster, CO
• Public Information	• Promote effective use of Zoning Regulations	• COMMERCIAL DESIGN MANUAL - Develop a design manual to explain regulations and standards and provide examples of appropriate signs, landscaping, architectural design	Pima County, Arizona Colorado Springs, Colorado
• Billboard Removal	• Improve safety and aesthetics	• BILLBOARD AMORTIZATION AND REMOVAL - The Massachusetts Outdoor Advertising Board had authority to de-license billboards	

2.80 INTRODUCTION TO EXISTING TRANSPORTATION ANALYSIS

This section provides a technical evaluation of the transportation components throughout the Boston Road Corridor study area. The transportation component activity encompassed extensive data collection and analyses of operations related to the various modes of transportation provided along the corridor. As a result, a measure of the corridor's existing transportation demands and system performance are identified.

2.81 Study Area Geometrics

The portion of Boston Road between Pasco Road in Springfield and the eastern study area boundary is classified as an urban extension of a rural minor arterial. This segment is approximately 6 miles long and is designated as State Route 20. The remaining 1.7 miles west of Pasco Road is classified as an urban principal arterial. The segment of roadway located in Springfield is under the jurisdiction of the City of Springfield. The segment of roadway located in the Town of Wilbraham is under the jurisdiction of the Massachusetts Highway Department (MHD).

Signalized Intersections

Following is a description of all signalized intersections along the Boston Road Corridor.

Breckwood Boulevard/Bay Street and Boston Road. This is a four way intersection with an irregular alignment controlled by a four-phase fully-actuated traffic signal. This intersection is divided by traffic islands on the minor approaches. Boston Road eastbound and westbound approaches have the same configuration, a shared through and left turn lane and a shared through and right turn lane. Breckwood Boulevard is marked for a shared through and left turn lane and an exclusive right turn lane. Bay Street is marked for an exclusive left turn lane and a shared through and right turn lane.

Harvey Street and Boston Road. This is a "T" intersection controlled by a semi-actuated two-phase traffic signal. Harvey Street has a single lane approach for shared left and right turns. The eastbound approach of Boston Road has a through lane and a shared through and left turn lane. The westbound approach has a through lane and a shared through and right turn lane.

Wilkes Street / Big Y Supermarket Access Drive and Boston Road. A recently reconstructed intersection that provides access to Big Y. This is a four way intersection controlled by a fully-actuated four-phase traffic signal. Wilkes Street has a single approach lane for all movements. The Big Y access drive has a shared through and left turn lane and an exclusive right turn lane. Boston Road eastbound is marked for a shared through and left turn lane and a shared through and right turn lane. The westbound approach has a through lane, a shared through and left turn lane and an exclusive right turn lane.

Wal-Mart Access Drive and Boston Road. This is also a reconstructed location that serves as the entrance to Wal-Mart. This intersection is a "T" intersection controlled by a fully-actuated three-phase traffic signal. The Wal-Mart access drive can accommodate two lanes of traffic. Boston Road eastbound has a through lane and a shared through and right turn lane. The westbound approach has two through lanes and an exclusive left turn lane.

Pasco Road and Boston Road. This intersection is a "T" intersection that is controlled by a two-phase semi-actuated traffic signal. Pasco Road accommodates two lanes of traffic, a left turn lane and a right turn lane. Boston Road eastbound has one through lane and a shared through and left turn lane. The westbound approach has one through lane and a shared through and right turn lane.

Parker Street and Boston Road. This is a four way intersection controlled by an eight-phase fully-actuated traffic signal. This intersection is divided by traffic islands providing for exclusive right turn lanes. Boston Road eastbound has two through lanes and an exclusive left turn lane. The westbound approach has two exclusive left turn lanes and two through lanes. Parker Street is marked for two through lanes and an exclusive left turn lane for both the northbound and southbound approaches.

Sears Access Drive and Boston Road. This intersection serves as the entrance to the Sears Roebuck & Co.and Eastfield Mall on the southern side of the roadway and the Springdale Mall on the northern side. This is a four-way intersection controlled by a semi-actuated six-phase traffic signal. Boston Road is provided with two through lanes, an exclusive left turn lane, and an exclusive right turn lane for both the eastbound and westbound approaches. The southbound approach has a shared through and left turn lane and one exclusive right turn lane. The northbound approach has two exclusive left turn lanes, and a shared through and right turn lane.

Eastfield Mall/Haymarket Square. This intersection serves as the entrance to the Eastfield Mall and Haymarket Square. This is a four-way intersection controlled by a three-phase semi-actuated traffic signal. The southbound approach is marked for two lanes, an exclusive left turn lane and a through and right turn lane. The northbound approach is marked for three lanes: a left turn lane, a through lane, and a right turn lane. Boston Road eastbound has an exclusive left turn lane, a through lane, and a shared through and right turn lane. The westbound approach has two through lanes, a left turn lane and a right turn lane.

Kent Road and Boston Road. This intersection is configured as a "T" intersection and it is controlled by a two-phase semi-actuated traffic signal. Kent Road is marked for two lanes, one for left turns and the other for right turns. The southbound approach of this intersection is the access drive to the SIS bank. Boston Road provides one through lane and one right turn lane on the eastbound approach. The westbound approach has one through lane and a shared through and left turn lane.

Stony Hill Road and Boston Road. This is a four way intersection controlled by a two-phase semi-actuated traffic signal. Both the east and westbound approaches of Boston

Road are driven as a shared through and left turn lane and a shared through and right turn lane. Stony Hill Road northbound and southbound has one approach lane that serves all movements.

Old Boston Road and Boston Road. This recently reconstructed location is a "T" intersection controlled by a two-phase fully-actuated traffic signal. Old Boston Road has a single lane approach for right and left turns. Boston Road is provided with one through lane and an exclusive left turn lane on the eastbound approach. The westbound approach is provided with one through lane and an exclusive right turn lane. Old Boston Road is utilized by heavy trucks as an alternative to Stony Hill Road due to the vertical clearance problems at the railroad overpass on Stony Hill Road.

Unsignalized Intersections

Following is a description of key unsignalized intersections along the Boston Road Corridor.

Maple Street and Boston Road. This is a "T" intersection controlled by a stop sign. Boston Road eastbound and westbound approaches have one through lane. Maple Street has a single approach lane for all movements. The minor street is mainly used as access to Boston Road in the westbound direction.

Main Street and Boston Road. This is a "T" intersection controlled by a stop sign. Boston Road eastbound and westbound approaches have one through lane. Main Street has a single approach lane for all movements.

Cottage Avenue and Boston Road. This is a "T" intersection with an irregular alignment and geometry. Cottage Avenue is controlled by a stop sign and has a single approach lane for all movements. Boston Road is provided with one through lane on the eastbound and westbound direction.

Maynard Road and Boston Road. This is a "T" intersection controlled by a stop sign. Boston Road eastbound and westbound have one through lane. Maynard Road has a single approach lane for all movements.

2.90 DATA COLLECTION PROCEDURES

Comprehensive data collection activity was conducted for this study to identify existing deficiencies. This activity consisted of obtaining traffic volumes, accident information, geometric constraints, travel patterns, travel speeds, transit ridership, and pedestrian facilities. A large portion of the data used in this report was collected by PVPC staff. Additional data was obtained from the Boston Road Corridor Study prepared by Vanasse Hangen Brustlin, Inc. for the City of Springfield in June 1993 and counts conducted by Champagne Associates.

2.91 Daily Vehicle Volume

Vehicle volume data was collected for the transportation analysis of the corridor in order to measure the travel demands. Average Daily Traffic (ADT) volumes were compiled for typical weekday 48 hour periods at various mid-block locations within the study area using Automatic Traffic Recorders (ATRs).

ADT information was gathered during the months of October 1993 and May 1994. An average weekday volume level was determined for each location for the month in which it was collected. In addition to PVPC collected counts, ADT information was gathered from technical reports conducted in the region. All ADT volumes were factored to represent Average Annual Daily Traffic (AADT) levels for 1994. See Table 2.9-1 for a listing of the average monthly adjustment factors for the region.

Table 2.9-1
Average Monthly Adjustment Factors
Boston Road Corridor Study

Data Collection Month	Percent of Annual Monthly Average	AADT Adjustment Factors
January	0.91	1.10
February	0.94	1.07
March	0.98	1.02
April	1.02	0.98
May	1.03	0.97
June	1.07	0.94
July	1.02	0.98
August	1.05	0.96
September	1.04	0.96
October	1.03	0.97
November	0.98	1.02
December	0.96	1.04

Source: MHD Permanent Count Stations in the Pioneer Valley Region.

2.92 Hourly Vehicle Volume

Traffic counts were conducted at key locations along the study corridor. Manual Turning Movement Counts (TMC) were conducted at several intersections within the study area. The TMCs were conducted during the peak commuter periods identified through a review of the ADT data. The Boston Road weekday commuter period occurs during the afternoon hours of 4:00 to 6:00. The weekend commuter period occurs between 11:30 a.m. and 1:30 p.m. At each location two hour TMCs were conducted to identify the peak four consecutive 15 minute periods of traffic through the intersection. These consecutive peak 15 minute periods constitute a location's "Peak Hour Volume". The peak hour of traffic volume represents the most critical period for operations and will be the focus for some of the analyses conducted in this study.

The TMC data also identifies the peak hour factor and vehicle classifications. The peak hour factor (PHF) accounts for variations in demand during the peak hour. The PHF is defined as the ratio of the volume occurring during the peak hour to the maximum rate of flow during a given time period within the peak hour.[1] For traffic engineering analysis the flow rate in the peak 15 minutes of the peak hour is used to determine the operational characteristics of traffic facilities. The flow rate is obtained from the peak hour volume by using the peak hour factor.

Vehicle classification identifies the percentage of heavy vehicles and passenger cars on the roadway. Heavy vehicles includes trucks, recreational vehicles and buses. The percent of heavy vehicles in the traffic flow is an important component in calculating the serviceability of a corridor or intersection. Trucks impact traffic flow because they occupy more roadway space than passenger cars and have poorer operating capabilities with respect to acceleration, deceleration and maneuverability.

2.93 Travel Speed

Travel speed measurements were collected for the Boston Road corridor in order to evaluate the efficiency of the roadway system. Average travel speeds were gathered for each segment along the corridor. Field measurements were conducted to measure the rate of movement of traffic on the roadway and to determine the location, type and extent of traffic delays.

2.94 Pedestrian and Transit Facilities

Pedestrian and transit facilities along the corridor were inventoried. Pedestrian facilities include sidewalks, crosswalks and pedestrian actuated traffic signals. Transit facilities include bus routes, scheduled stop locations, and shelters. The PVPC has also compiled information pertaining to transit ridership demand from a survey of Route 107.

An on-board survey was conducted in order to obtain a sample of the overall commute flow on transit. Transit riders were surveyed during the month of June, 1994. Riders

---

[1]Institute of Transportation Engineers, *Transportation and Traffic Engineering Handbook*,

were asked to fill out a questionnaire during their trip on the bus, indicating which stops they utilized for their trip, and the time they traveled.

2.95 Accident Experience

Traffic accident data for the study area was obtained from the Massachusetts Highway Department. Accident location, frequency, severity and type were analyzed for a period of three years (1990 - 1992) to identify any common conditions and possible causes. The accident rate for each intersection was identified in order to determine any patterns of high hazard occurrence. This rate measures the number of annual accident per one million entering vehicles.

2.100 DATA SUMMARY

2.101 Average Daily Traffic Volumes

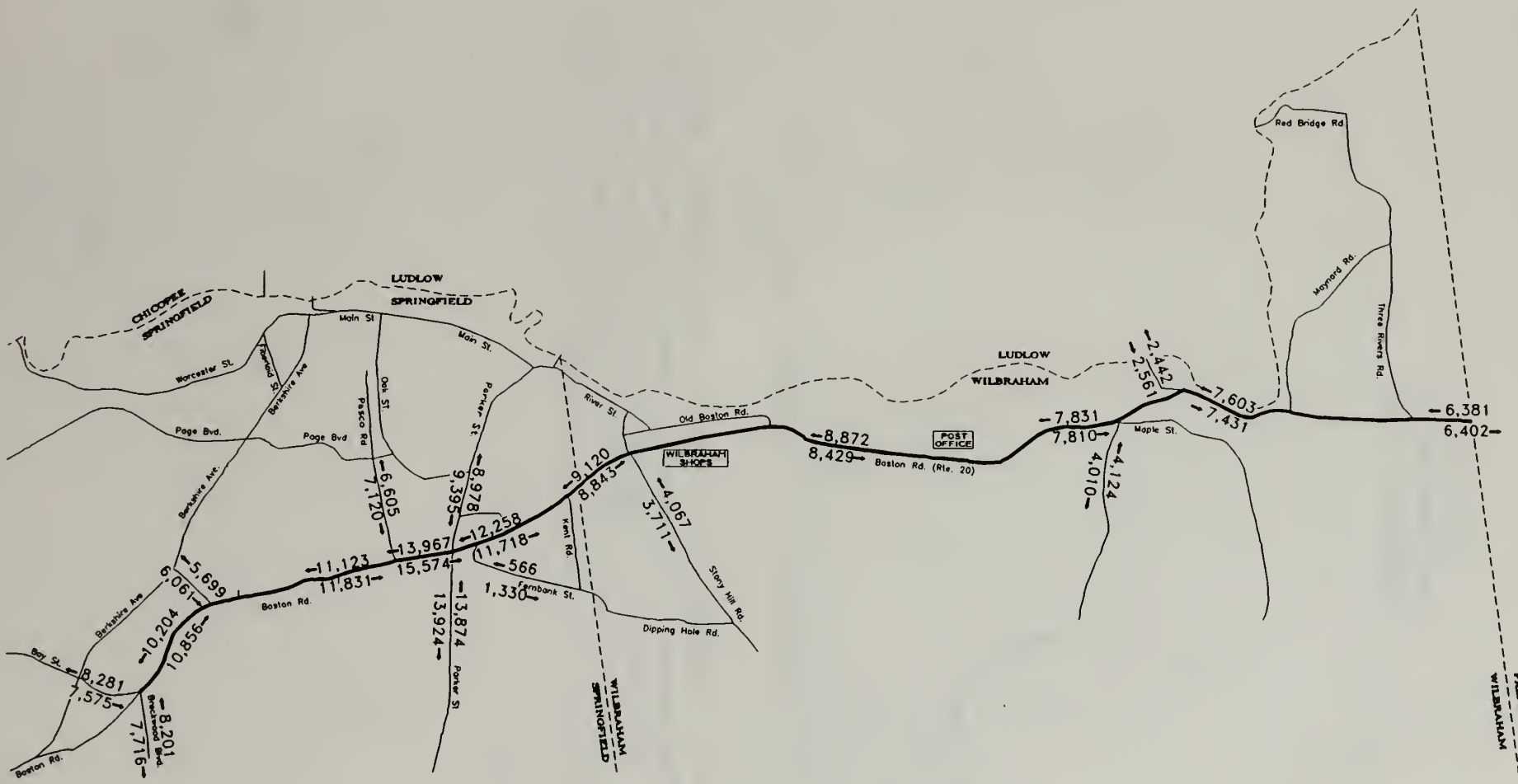
Boston Road Average Annual Daily Traffic (AADT) was compiled at twenty two mid-block locations throughout the corridor. Some of these ADT counts were conducted on roadways adjacent to the Boston Road corridor to identify travel patterns and vehicle movement in the study area. All traffic counts were adjusted to represent 1994 year conditions. The ADT counts were adjusted to the region's seasonal factors and annual growth factors characteristic of the study area. Figure 2.10-1 presents a map of the 1994 AADT directional volumes along the Boston Road corridor.

The Boston Road ADT volumes were plotted on an hourly basis to illustrate the travel demand curve for the corridor. Figure 2.10-2 presents a summary of the Boston Road weekday and weekend AADT average for the corridor and each municipality. The Boston Road Corridor travel demand curve follows the patterns outlined in the Transportation Research Board's 1985 Highway Capacity Manual for an intercity route. The typical morning and evening peak commuter hours are evident with a significant increase in travel demand during the morning commuter period that consistently increases through the evening commuter period. The increase in traffic during the late afternoon is directly related to the types of trips serviced. During this period the traffic along Boston Road is composed not only of commuter trips, but also shopping and other trip purposes. The morning peak tends to include commuters almost exclusively. Traffic volumes steadily decline once the peak period ends. This cycle is repeated throughout the week. During the weekend, the peak hour occurs earlier in the day and is lower than the weekday peak.

2.102 Peak Hour Traffic Volumes

Turning Movement Counts (TMC) were gathered for several key intersections in the study area. These intersections include all signalized and designated unsignalized intersections along Boston Road. Vehicle turning movement counts were obtained for the following locations:

Breckwood Blvd./Bay Street
Big Y Access Drive (estimated)
Pasco Road
Sears Access Drive
Kent Road
Old Boston Road
Main Street
Maynard Road
Harvey Street
Wal-Mart Access Drive (estimated)
Parker Street
JC. Penney/Toys R Us Access Drive
Stony Hill Road
Maple Street
Cottage Avenue



Boston Road Corridor Study
Springfield - Wilbraham

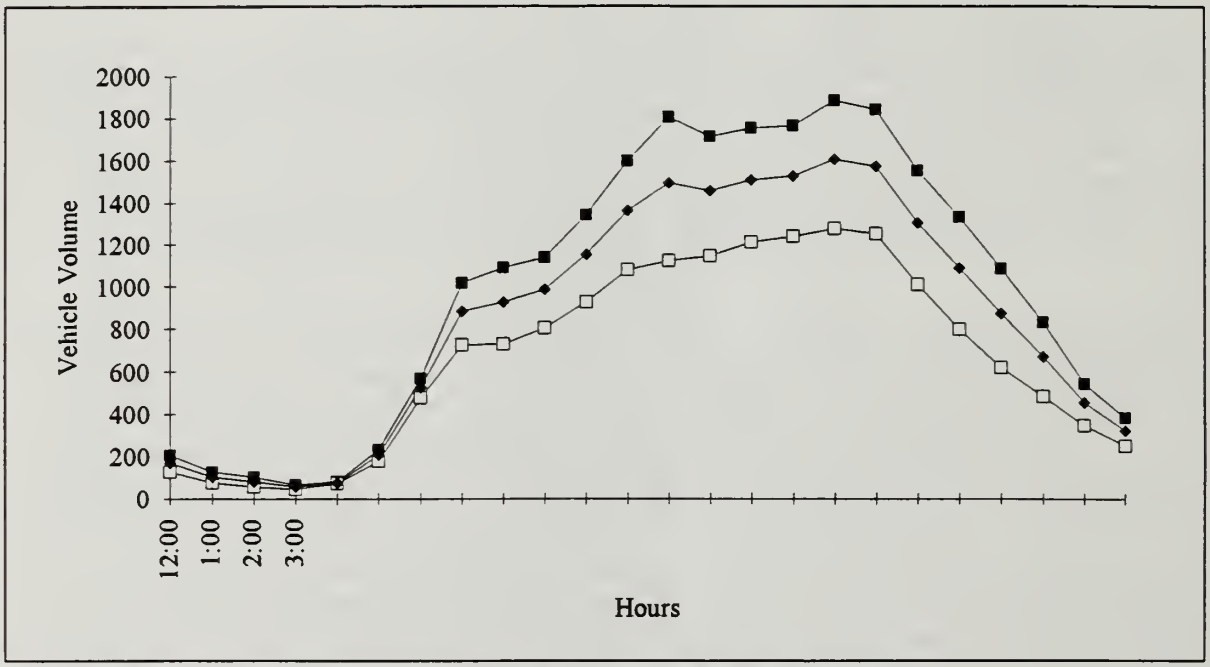
Prepared By -
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
1994

Scale
1 0 1 mile

Figure 2.10-1

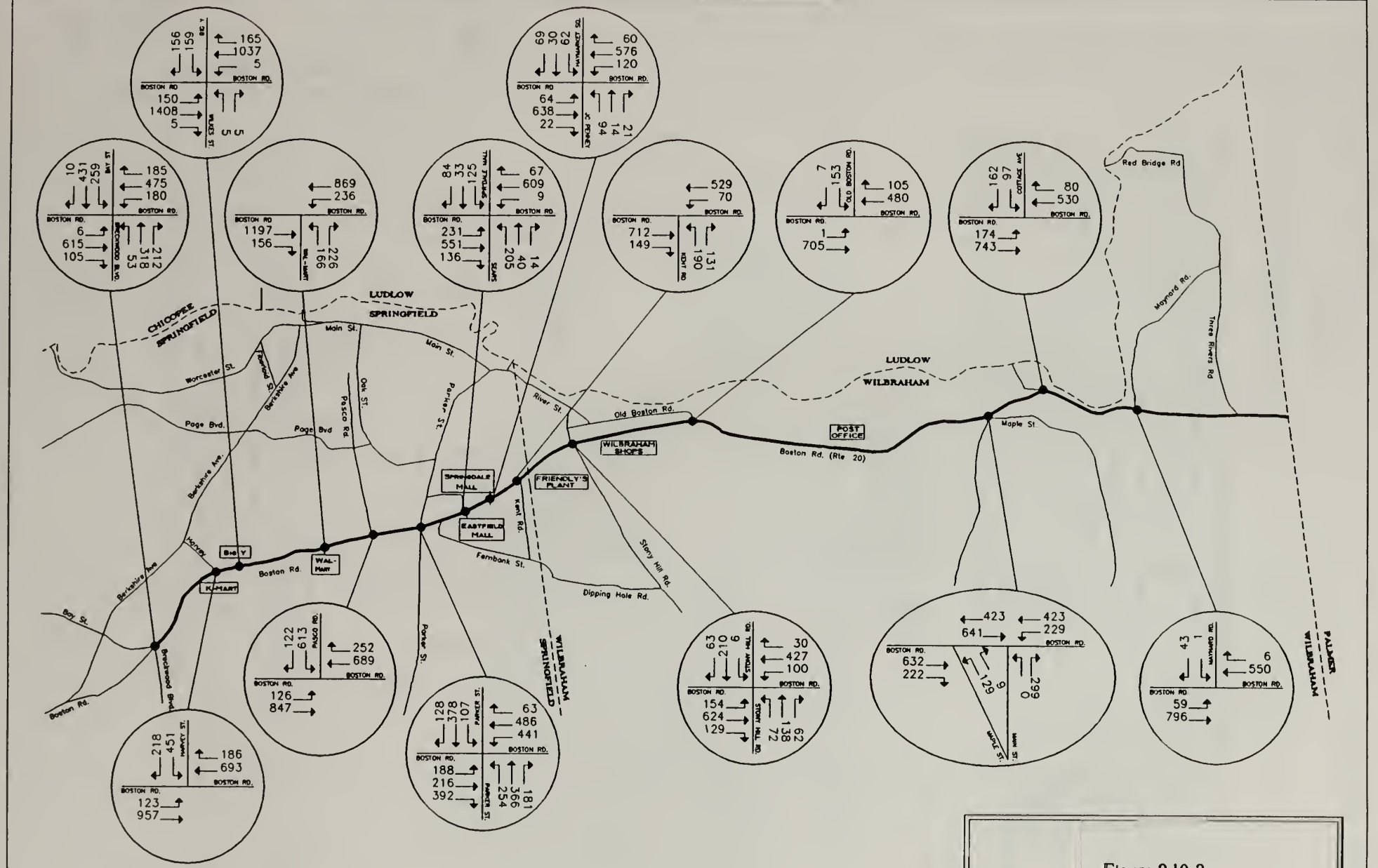
1994 Average Daily Traffic

Figure 2.10-2
Hourly Volume Summary
Boston Road Corridor



Source: ADT counts from PVPC, Vanasse Hangen Brustlin, Inc., and Champagne Associates.

The TMC data were obtained during weekday and weekend peak periods. The data obtained from other sources were adjusted to reflect 1994 peak hour volumes. The same adjustment factors used for converting ADT counts into AADT were used to adjust the 1994 peak hour volumes. Figure 2.10-3 and 2.10-4 illustrate the location and volume of the 1994 peak hour traffic volumes for weekday and weekend peak periods respectively.



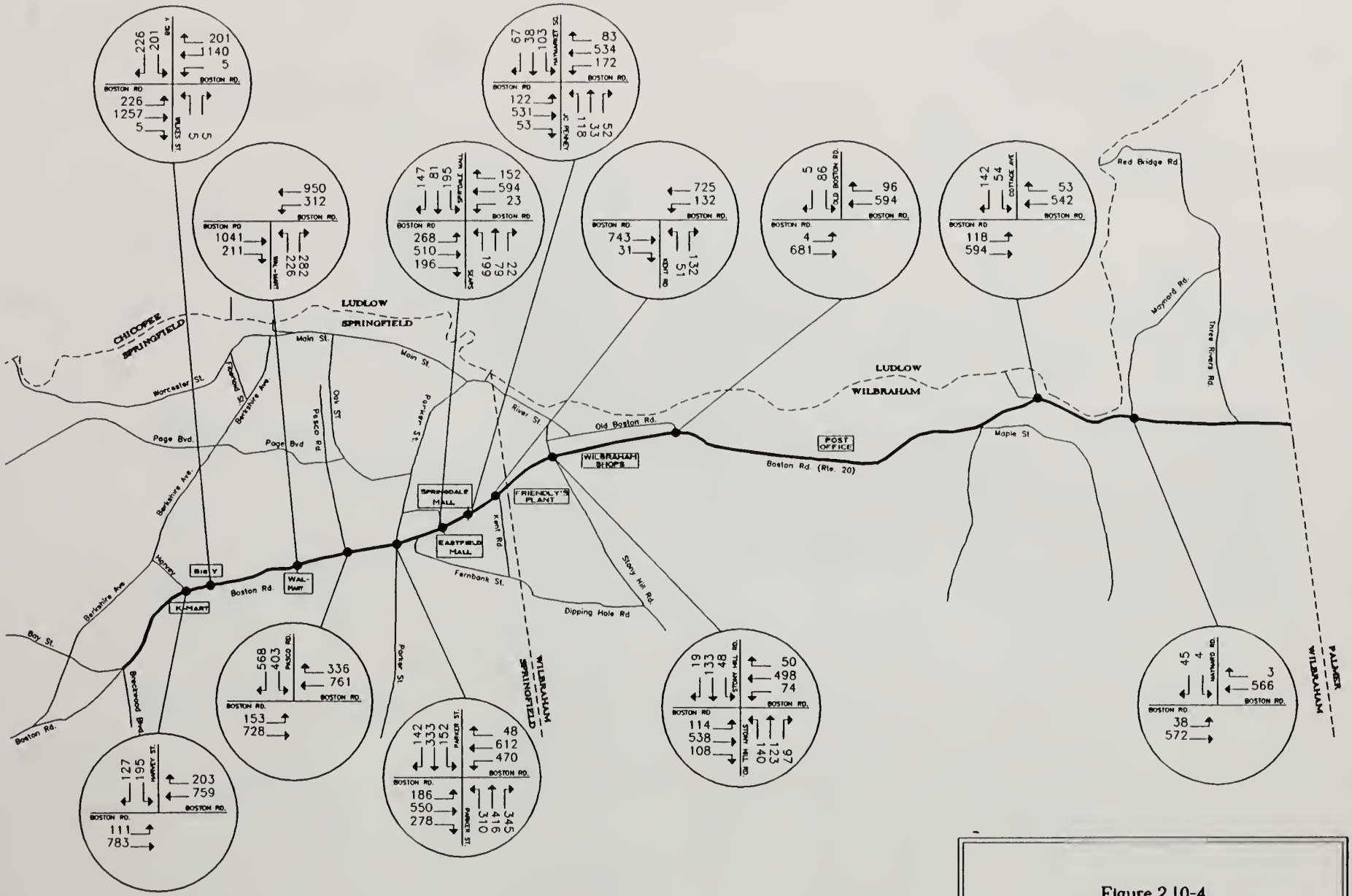
Boston Road Corridor Study
Springfield - Wilbraham

Prepared By -
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
1984

Scale
1 0 1 mile

Figure 2.10-3

TURNING MOVEMENTS
PM Peak Hour



Boston Road Corridor Study
Springfield - Wilbraham

Prepared By -
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
1994

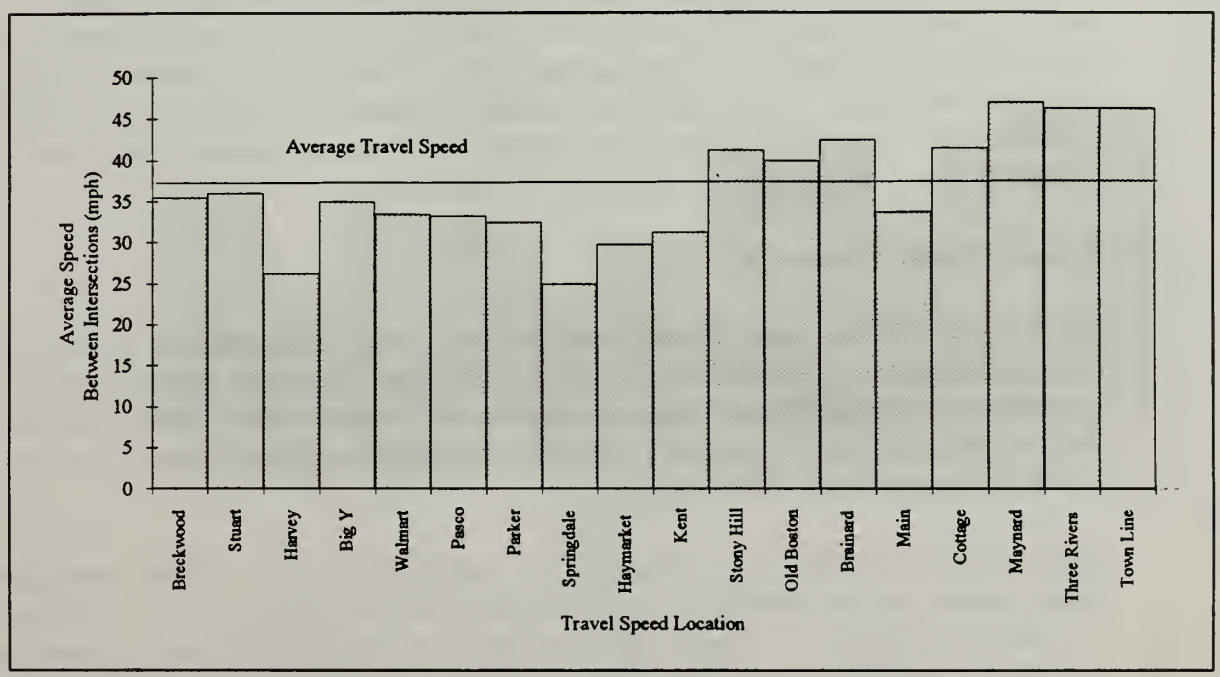
Figure 2.10-4

TURNING MOVEMENTS
Saturday Peak Hour

2.103 Travel Speed Measurements

Field measurements were conducted along the length of the Boston Road corridor to evaluate the quality of traffic flow, measure travel speeds and travel times. A test vehicle was driven along the study route (both directions) at speeds characteristic of the corridor's traffic. This "floating-car" technique was conducted during a typical weekday at off peak conditions. Average travel speeds, or free flow speeds were gathered for each segment along the Boston Road corridor. The field measurements for the eastbound and westbound traffic flow were comparable thus, the travel speeds were aggregated to produce an average travel speed for the segment. Figure 2.10-5 illustrates the average travel speed measurements for the segments along the corridor including the average travel speed for the entire corridor.

Figure 2.10-5
Travel Speed Measurements
Boston Road Corridor



Source: PVPC field study.

The average travel speed along the corridor was determined to be 37 mph. Travel speeds in segments of the corridor located in Wilbraham are higher than those located in Springfield. Higher speed limits, fewer traffic signals, lower density of roadside development allow for these greater speeds. The lowest travel speeds are found in the vicinity of the Eastfield Mall, Springdale Mall and Haymarket Square due to the large volumes of vehicles entering and exiting these shopping areas.

2.104 Pedestrian Facility Inventory

An inventory of pedestrian facilities was conducted throughout the study area. This includes sidewalks, crosswalks and pedestrian signals. Figure 2.10-6 shows the location of sidewalks along the corridor. Paved sidewalks are provided along certain portions of Boston Road mainly in Springfield. Very little paved sidewalks exist in Wilbraham. The condition of the sidewalks in many locations is deteriorating. Crosswalks are provided at only two intersections, Breckwood Blvd./Bay Street and Boston Road, and Gilbert Street and Boston Road. Pedestrian crossing signs are located at these locations and also near Five Mile Pond. Pedestrian crosswalks, however, are not found near that recreational area.

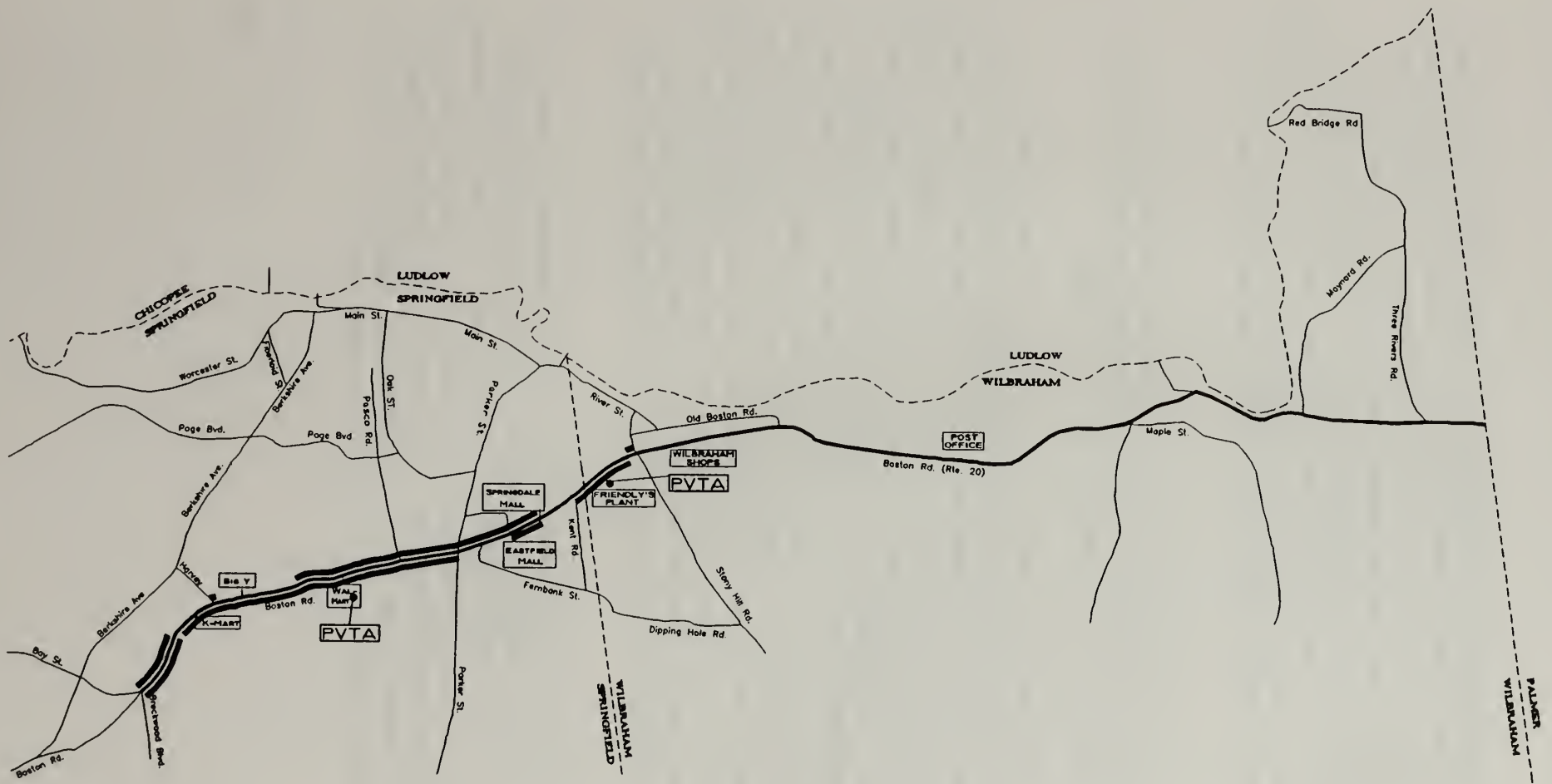
Exclusive pedestrian phases are present only at two of the nine signalized intersections within the study area. These are: the Intersections of Breckwood Blvd./Bay Street and Boston Road, and Big Y Access Drive and Boston Road.

No sidewalk facilities are provided from the Boston Road corridor into the many shopping locations found in the study area. Pedestrians wishing to enter a shopping area must walk on the roadway or access the parking lot. The lack of pedestrian facilities and poor condition of many existing sidewalks along Boston Road does not encourage pedestrian travel. In addition, the many uncontrolled driveways located along the corridor present conflict between pedestrians and vehicles.

2.105 Transit Facility Inventory

Public transit facilities along Boston Road were inventoried to identify the location of bus stops, amenities, existing fixed routes and schedules. Currently, the study area is served by three separate fixed routes operated by the Pioneer Valley Transit Authority (PVTA), Routes 107, 401, and 403. There is no privately operated intercity bus service currently using the study area corridor.

Route 107 State St./Boston Rd./Wal-Mart/K-Mart/Eastfield Mall is aligned along the entire western portion of the study area, serving State Street and Boston Road from Downtown Springfield to its easternmost terminus of Eastfield Mall. Several major trip generators exist along its alignment, most of which are west of the study corridor, however, major study area shopping sites such as: K-Mart, Big Y Supermarket, Wal-Mart, Marshall's, Springdale Mall and Eastfield Mall are serviced by the route. Some buses on route 107 terminate at Wal-Mart, while others continue to the Eastfield Mall. Currently, the 107 operates with a headway, or frequency, of 15 minutes between buses, with every other bus serving the area between Wal-Mart and Eastfield Mall. During the summer months ridership tends to decline and therefore, headways are increased to 20 minutes, allowing fewer buses to provide an adequate level of service.



MAP KEY

SIDEWALK FACILITIES

PVTA BUS SHELTER

Scale
1 0 1 mile

Boston Road Corridor Study
Springfield - Wilbraham

Prepared By -
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
1994

Figure 2.10-6

SIDEWALK FACILITIES

Routes 401 North Wilbraham and 403 Wilbraham Rd./Parker St./Hill Crest Avenue are aligned on State Street from Downtown Springfield, but also serve Wilbraham Road out to eastern Springfield. The 401 serves the Town of Wilbraham via Stony Hill Road, Tinkham Road, Main Street and then, Boston Road westward to the Eastfield Mall. The 403 has the same alignment in Springfield as the 401, but then serves Parker and Cooley Streets to get to Eastfield Mall. The schedules on these routes vary throughout the day, but tend to operate mostly during peak commuting hours, 7 to 9 a.m. and 4 to 6 p.m., with fewer trips midday. Figure 2.10-7 exhibits alignments for all three of the study areas routes.

There are 44 PVTA bus stops in the study area. Table 2.10-1 outlines what type of passenger amenities exist at each stop, what routes serve the stop, and whether or not the stop is officially marked, since some stops do not have a sign.

The ridership of the transit routes servicing the study area varies considerably form route to route. In order to consistently measure performance, a ridership rate per hour or mile is calculated and used for comparison. Table 2.10-2 depicts the current ridership for the study area routes. The ridership rate on route 107, 53.9 passengers per hour, places it above all other routes in the PVTA system. In fact, the route is well above the national average. As of the Spring of 1994, however, route 107 was experiencing severe schedule adherence problems due to overloading and heavy traffic along Boston Road. At times buses were over twenty minutes late, prompting the use of filler buses. In June, the PVPC conducted a comprehensive origin/destination survey of route 107's ridership. Passengers were asked about the origin, destination, and purpose of their trip. Counts at each stop of boardings and deboardings were performed simultaneously. As a result of the survey, both the Summer schedule and the upcoming Fall schedule have been altered to allow for longer running times for route 107. Frequency has remained the same.

The Route 107 survey results show that 33.7 percent of the passengers on route 107 are commuting to work. This percentage even holds true for the stops at major shopping sites, meaning that PVTA transports many of their employees. 57.4 percent of the route 107's ridership is comprised of those who ride everyday. Over 10 percent of the route's ridership comes from transfers from other routes downtown and nearly five percent of those boarding downtown ride all the way to Eastfield Mall. Figures 2.10-8 and 2.10-9 show the breakdown of trip purposes and rider frequency for route 107.

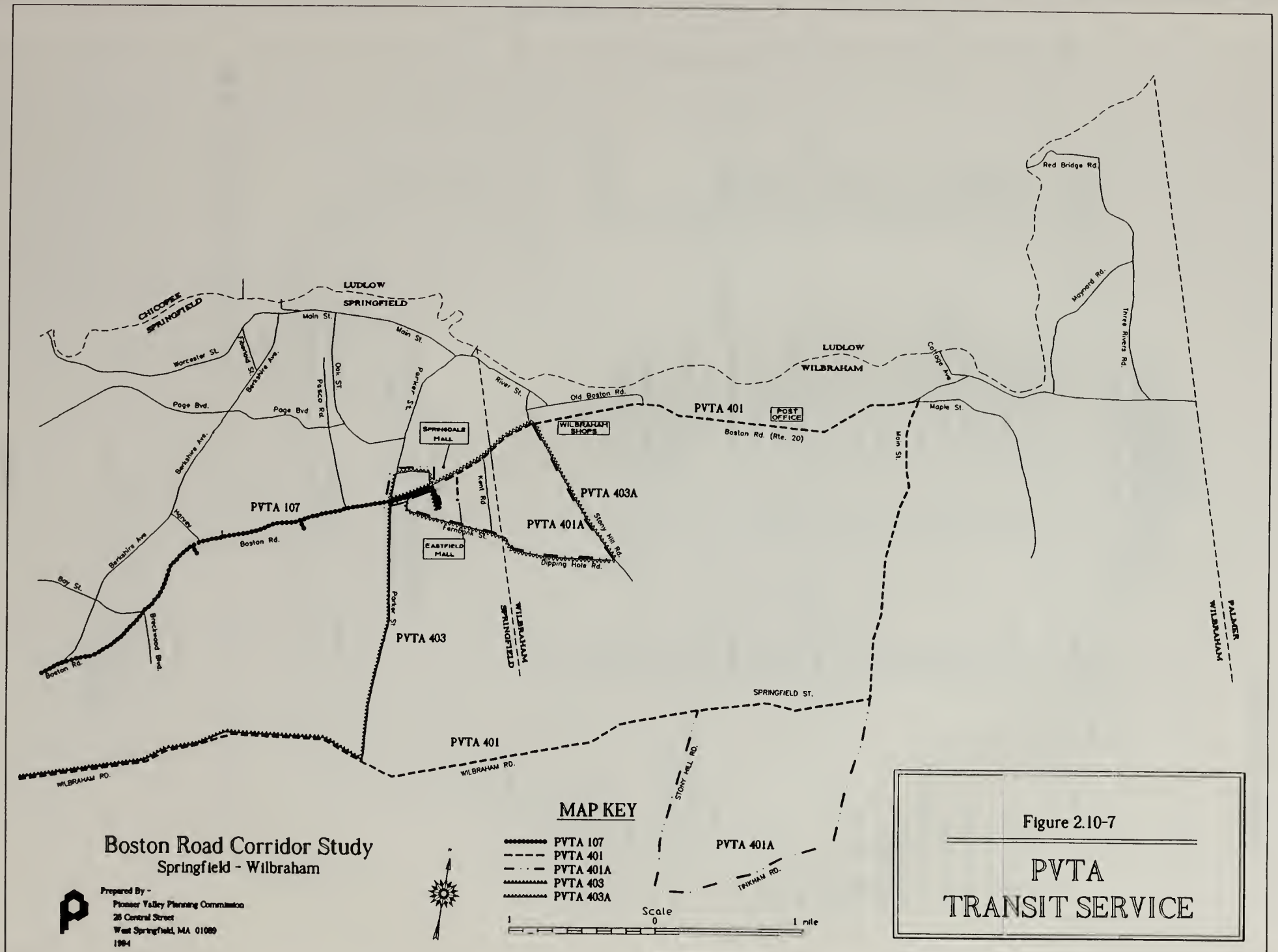

CHICOPEE
SPRINGFIELD
LUDLOW
SPRINGFIELD
Main St.
Worcester St.
Berkshire Ave.
Page Blvd.
Page Blvd
Pasco Rd.
Oak St.
Porter St.
River St.
Old Boston Rd.
LUDLOW
WILBRAHAM
College Ave.
Red Bridge Rd.
Maynard Rd.
Three Rivers Rd.
PVTA 401
POST OFFICE
Boston Rd. (Rte. 20)
Maple St.
Main St.
SPRINGDALE MALL
WILBRAHAM SHOPS
Kent Rd.
PVTA 403A
PVTA 401A
Story Hill Rd.
Dipping Hole Rd.
Fernbank St.
EASTFIELD MALL
PVTA 107
Berkshire Ave.
Harvey
Boston Rd.
Bay St.
Brentwood Blvd.
Boston Rd.
Porter St.
PVTA 403
WILBRAHAM
SPRINGFIELD
PALMER
WILBRAHAM
SPRINGFIELD ST.
PVTA 401
WILBRAHAM RD.
WILBRAHAM RD.
STONY HILL RD.
PVTA 401A
TINKHAM RD.
MAP KEY
PVTA 107
PVTA 401
PVTA 401A
PVTA 403
PVTA 403A
Scale
1
0
1 mile
Boston Road Corridor Study
Springfield - Wilbraham
Prepared By -
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
1994
Figure 2.10-7
PVTA
TRANSIT SERVICE

Table 2.10-1
Transit Facility Inventory
Boston Road Corridor Study

East Outbound			West Inbound		
Location	**Facility**	**Routes**	**Location**	**Facility**	**Routes**
Fargo Street	Sign	107	Hunter Street	No Sign	401
Gresham Street	No Sign	107	Brainard Road	No Sign	401
K-Mart Plaza	Sign	107	Stony Hill Road	No Sign	401
Zone Boundary	Sign	107	Friendly's Ice Cream Plant	No Sign	401
Wilkes Street	Sign	107	Eastfield Mall Entrance	Sign	107, 401/3
Glenwood Boulevard	Sign	107	Stop & Shop	Sign	401, 403
Wallace Street	Sign	107	Springdale Mall	Sign	107
Lloyd Street	Sign	107	Parker Street	Sign	107
Slater Avenue	No Sign	107	Pasco Road	No Sign	107
Shumway Street	Sign	107	Point Grove Street	No Sign	107
Wal-Mart	Bench/Shelter	107	Wal-Mart	Bench/Shelter	107
Health Street	Sign	107	Shumway Street	Sign	107
Jamaica Street	No Sign	107	Lloyd Street	No Sign	107
Lucerne Street	No Sign	107	Elmore Street	No Sign	107
Parker Street	No Sign	107	Glenwood Boulevard	No Sign	107
Sears Automotive	No Sign	107, 401/3	Wilkes Street	Sign	107
The Path - Fernbank Estates	No Sign	107, 401/3	Zone Boundary	Sign	107
Eastfield Mall Entrance	Sign	401	K-Mart Plaza	Sign	107
Stocker Street	No Sign	401	Stuart Street	Sign	107
Dudley Street	No Sign	401	Morton Street	Sign	107
Friendly's Ice Cream	Shelter	401	Bay Street	Bench/Shelter	107
Stony Hill Road	No Sign	401			
Old Boston Road	Sign	401			
Railroad Avenue	No Sign	401			

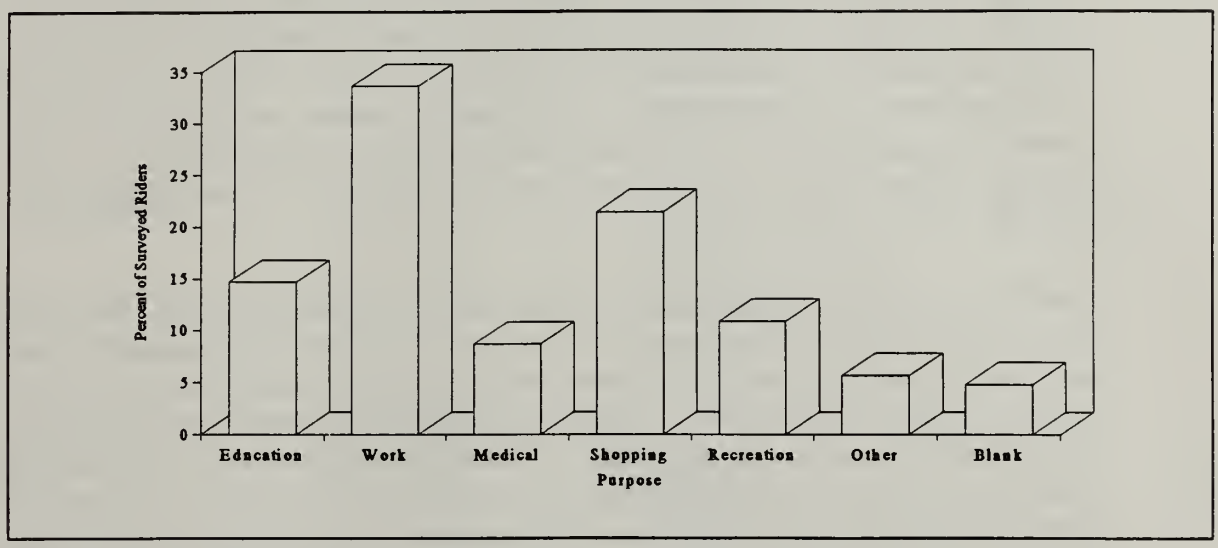
Source: PVPC field study.

Table 2.10-2
Average Transit Passenger Demand
Boston Road Corridor Study

Route	Passengers Per Mile	Passengers Per Hour
107	5.4	53.9
401	1.3	23.7
403	2.5	28.4
System Avg.	2.5	31.6

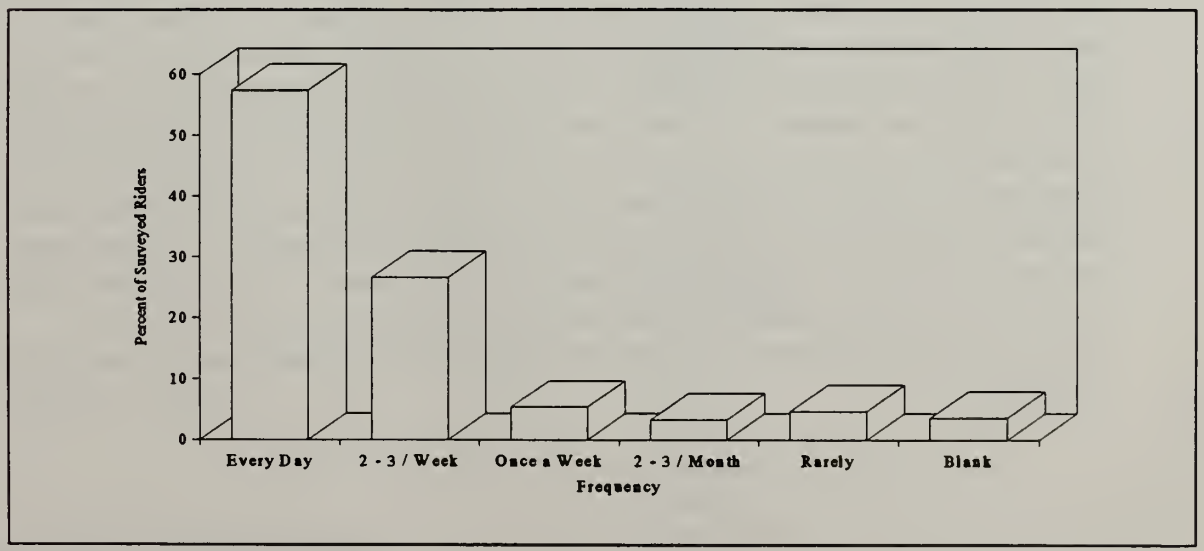
Source: PVTA

Figure 2.10-8
Route 107 Ridership By Purpose
Boston Road Corridor Study



Source: Route 107 On Board Survey

Figure 2.10-9
Route 107 Ridership By Frequency
Boston Road Corridor Study



Source: Route 107 On Board Survey

2.106 Accident Experience

Accident history was used to estimate the safety conditions throughout the study area. Accident information regarding incidents at mid-block locations is not consistently available, therefore, safety analyses are based on information gathered at intersection locations. Intersection accident data was obtained from the Massachusetts Highway Department (MHD). Accident location, frequency, severity and type were analyzed for a period of three years (1990-1992). An intersection accident rate was calculated for comparison purposes. This rate measures the number of annual accidents per million entering vehicles. Table 2.10-3 lists the accident summary for the main intersections along the Boston Road corridor.

In addition, the MHD publishes a report entitled: Top 1000 High Accident Intersections. This report lists high accident locations for all roadways in the commonwealth according to the severity and frequency of accidents during a period extending for three years. The last two high accident location reports were reviewed and three intersections along the Boston Road corridor were identified. The Bay St./Breckwood Blvd. and Boston Road intersection was on the MHD list of high accident intersections for the period of 1989 through 1991. During 1991 and 1992 the number of accidents dropped and the intersection did not make the 1990 - 1992 MHD list of high accident locations. Identified in the 1990 - 1992 report as high accident intersections are the Parker Street and Stony Hill Road intersections.

During the public participation process, the Springfield Police Department commented that the accident experience at the intersection of Boston Road with Pasco Road is much higher than reported through MHD records. PVPC received accident information from both the Springfield Police Department and the Springfield Department of Public Works for the intersections of Breckwood Boulevard, Harvey Street, Fargo Street and Pasco Road with Boston Road. This information was added to Table 2.10-3 for comparative purposes. As can be seen from the Table, the local accidents records are substantially higher than the MHD records for the City of Springfield. The disparity between the accident records is most likely from an accident occurring at a site drive in the vicinity of an intersection not being assigned to the intersection by the MHD records. The high accident experience along Boston Road is addressed in Section 3.45 of this report.

Table 2.10-3
Accident History Summary

Location	Year	Number of Accidents		Type*		Severity*		Accident Rate*
		Local	MHD					
Breckwood Blvd.	90	14	12	Angle	9	PD	11	0.925
	91	12	7	Rear end	11	PI	13	0.537
	92	10	5	Head on	1	F	0	0.381
	93	10		Pedestrian	0			
	94	13		Fixed object	0			
				Other	3			
Harvey Street	90	17	5	Angle	7	PD	10	
	91	13	2	Rear end	4	PI	5	
	92	24	8	Head on	1	F		
	93	12		Pedestrian				
	94	32		Fixed object				
				Other	3			
Pasco Road	90	18	4	Angle	4	PD	5	0.348
	91	4	4	Rear end	5	PI	7	0.346
	92	12	4	Head on	1	F	0	0.344
	93	15		Pedestrian	0			
	94	13		Fixed object	0			
				Other	2			
Parker Street	90		9	Angle	9	PD	14	0.559
	91		11	Rear end	16	PI	16	0.679
	92		10	Head on	1	F	0	0.614
	93			Pedestrian	0			
	94			Fixed object	0			
				Other	4			
Springdale Mall	90		3	Angle	0	PD	3	0.321
	91			Rear end	2	PI	0	
	92			Head on	0	F	0	
				Pedestrian	0			
				Fixed object	0			
				Other	1			
Haymarket Square	90		1	Angle	2	PD	2	0.127
	91		1	Rear end	0	PI	1	0.126
	92		1	Head on	0	F	0	0.125
				Pedestrian	0			
				Fixed object	0			
				Other	1			
Kent Road	90		3	Angle	1	PD	5	0.399
	91		3	Rear end	4	PI	1	0.397
	92			Head on	0	F	0	
				Pedestrian	0			
				Fixed object	0			
				Other	1			

Source: Massachusetts Highway Department and City of Springfield

* *Based on MHD records*

Table 2.10-3
Accident History Summary

Location	Year	Number of Accidents		Type*		Severity*		Accident Rate*
		Local	MHD					
Stony Hill Road	90		10	Angle	27	PD	31	1.161
	91		13	Rear end	11	PI	11	1.501
	92		19	Head on	1	F	0	2.182
				Pedestrian	0			
				Fixed object	0			
				Other	3			
Old Boston Road	90		3	Angle	4	PD	4	0.483
	91		2	Rear end	0	PI	1	0.320
	92			Head on	0	F	0	
				Pedestrian	0			
				Fixed object	1			
				Other				
Maple Street	90		3	Angle	0	PD	4	0.478
	91			Rear end	4	PI	0	
	92		1	Head on	0	F	0	0.158
				Pedestrian	0			
				Fixed object	0			
				Other	0			
Main Street	90		1	Angle	0	PD	4	0.142
	91		1	Rear end	8	PI	4	0.141
	92		6	Head on	0	F	0	0.840
				Pedestrian	0			
				Fixed object	0			
				Other	0			
Cottage Avenue	90		5	Angle	5	PD	6	0.654
	91		4	Rear end	5	PI	6	0.520
	92		3	Head on	1	F	0	
				Pedestrian	0			
				Fixed object	0			
				Other	1			
Maynard Road	90		1	Angle	2	PD	3	0.159
	91		2	Rear end	2	PI	2	0.317
	92		2	Head on	0	F	0	0.315
				Pedestrian	0			
				Fixed object	0			
				Other	1			

Source: Massachusetts Highway Department

2.110 ANALYSIS PROCEDURES

2.111 Intersection Analysis

The corridor study examined the operations at eleven signalized and four unsignalized intersections throughout the study area. Operation analysis have been conducted at the signalized intersections to determine capacity constraints for all approaches at each location.

The efficiency of traffic operations at a signalized location is measured in terms of the ratio of vehicle volume to capacity (v/c) and delay. These conditions are measured using the nationally accepted standard methodology outlined in the 1985 Highway Capacity Manual (HCM). The HCM's measure of efficiency is quantified in terms of "Level Of Service" (LOS). The LOS refers to the quality of traffic flow along roadways and intersections. It is described in terms of A through F, where A represents the best possible conditions and F represents forced-flow or failing conditions. Table 2.11-1 describes the level of service designations for signalized intersections.

Table 2.11-1
Level Of Service (Los) Designations
Signalized Intersections
Boston Road Corridor Study

Category	Description	Delay (in seconds)
LOS A	Describes a condition of free flow, with low volumes and relatively high speeds. There is little or no reduction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speeds. Little or no delays result for side street motorists.	< 5.0
LOS B	Describes a condition of stable flow, with desired operating speeds relatively unaffected, but with a slight deterioration of maneuverability within the traffic stream. Side street motorists experience short delays.	5.1 to 15.0
LOS C	Describes a condition still representing stable flow, but speeds and maneuverability begin to be restricted. Motorists entering from side streets experience average delays.	15.1 to 25.0
LOS D	Describes a high-density traffic condition approaching unstable flow. Speeds and maneuverability become more restricted. Side street motorists may experience longer delays.	25.1 to 40.0
LOS E	Represents conditions at or near the capacity of the facility. Flow is usually unstable, and freedom to maneuver within the traffic stream becomes extremely difficult. Very long delays may result for side street motorists.	40.1 to 60.0
LOS F	Describes forced flow or breakdown conditions with significant queuing along critical approaches. Operating conditions are highly unstable as characterized by erratic vehicle movements along each approach.	> 60.0

Source: Highway Capacity Manual, special Report 209, 1985

The Level of Service for unsignalized intersections is based on the "available reserve capacity". Reserve capacity is defined as the unused capacity of the minor approach in vehicles per hour. This measure indicates the amount of vehicles using that approach that would cause the intersection to operate at capacity. The Level of Service for unsignalized intersection is shown for the intersection's critical movement instead of the entire intersection. Table 2.11-2 lists the level of service criteria for unsignalized intersections.

Table 2.11-2
Level Of Service Designation
Unsignalized Intersections

Reserve Capacity PCPH	LOS	Expected Delay To Minor Street
> 400	A	Little or no delay
300 - 399	B	Short traffic delays
200 - 299	C	Average traffic delays
100 - 199	D	Long traffic delays
0 - 99	E	Very Long delays
< 0	F	Extreme delays

PCPH: Passengers Cars Per Hour

Source: Highway Manual, 1985

2.112 Analysis Summary

Intersection capacity analyses were conducted for the key locations along the Boston Road Corridor. Traffic signal permit plans for signalized intersections were reviewed to determine the signal timing phase sequence and length. The analysis presents information identifying the operational condition of intersections, both signalized and unsignalized. Acceptable conditions are those measured with Level Of Service (LOS) assignments of A through D, while unacceptable conditions are assigned E or F. The LOS for individual intersection approaches was calculated as well as for overall intersection operation. Table 2.11-3 presents the Level of Service (LOS) for the signalized intersections during the weekday p.m. and weekend peak hour.

The results of the capacity analysis presented in Table 2.11-3 indicate that five of the signalized intersections studied experience some unacceptable conditions during peak weekday and/or weekend conditions. With Boston Road being represented by eastbound and westbound approaches, it is seen that the only failing condition on Boston Road is experienced at the Big Y Access Drive intersection. Other unacceptable conditions are identified for movements on side streets or access drives. Also, the weekday p.m. peak hour experiences poorer operating LOS than the weekend peak hour. This is the result of higher traffic volumes observed during the weekday peak period.

Table 2.11-3
Existing Signalized Intersection Los
Weekday and Weekend Peak Hour

Location	Direction	Weekday LOS Approach	Weekday LOS Intersectio	Weekend LOS Approach	Weekend LOS Intersectio
Bay St. / Breckwood Blvd.	Northbound	E			
	Southbound	F	D	N/A	N/A
	Eastbound	C			
	Westbound	C			
Harvey Street	Southbound	E		B	
	Eastbound	B	C	B	B
	Westbound	B		B	
Big Y Access Drive	Northbound	B		B	
	Southbound	C	C	D	E
	Eastbound	D		F	
	Westbound	B		B	
Wal-Mart Access Drive	Northbound	B		B	
	Eastbound	C	C	C	C
	Westbound	B		B	
Pasco Road	Southbound	E		D	
	Eastbound	B	C	B	C
	Westbound	B		C	
Parker Street	Northbound	D		D	
	Southbound	C	C	C	C
	Eastbound	C		C	
	Westbound	C		C	
Sears Access Drive	Northbound	D		D	
	Southbound	D	C	F	D
	Eastbound	C		B	
	Westbound	C		C	
JC Penney Access Drive	Northbound	C		C	
	Southbound	C	C	C	C
	Eastbound	C		C	
	Westbound	C		C	
Kent Street	Northbound	B		B	
	Eastbound	B	B	B	B
	Westbound	B		B	
Stony Hill Road	Northbound	B		B	
	Southbound	B	B	B	B
	Eastbound	B		B	
	Westbound	B		B	
Old Boston Road	Southbound	D		C	
	Eastbound	A	B	A	A
	Westbound	A		A	

Source: Highway Capacity Software Analysis.

Table 2.11-4 summarizes the level of service at the key unsignalized intersections along the corridor during the weekday p.m. peak hour and for the weekend peak period. During the weekday p.m. peak hour, critical movements for the minor streets of the key unsignalized intersections along the corridor operate at LOS E or worse.

At several intersections, the Boston Road through traffic volumes offer a limited amount of adequate gap time between vehicles to safely allow side street vehicles to maneuver into the flow of traffic. Similar to the signalized intersections, the unsignalized intersections analyzed during the weekday p.m. peak hour experiences poorer operating LOS than those of the weekend peak hour.

Table 2.11-4
Existing Unsignalized Intersection Los
Boston Road Corridor Study

Location	Approach		LOS	Reserve Capacity
Weekday PM Peak Hour				
Maple Street	Northbound	Left	F	- 37
		Right	B	341
	Westbound	Left	B	387
Main Street	Northbound	Left	E	64
		Right	D	124
	Westbound	Left	B	305
Cottage Avenue	Southbound	Left	F	- 26
		Right	B	371
	Eastbound	Left	A	422
Maynard Road	Southbound	Left	E	78
		Right	A	453
	Eastbound	Left	A	552
Weekend Peak Hour				
Cottage Avenue	Southbound	Left	E	57
		Right	B	391
	Eastbound	Left	A	489
Maynard Road	Southbound	Left	D	111
		Right	A	440
	Eastbound	Left	A	562

Source: Highway Capacity Software Analysis

3.0 CORRIDOR BUILD-OUT ANALYSIS

3.10 INTRODUCTION TO THE BUILD-OUT ANALYSIS

In order to prepare a picture of future land uses and any associated traffic, planners employ build-out projections. Traffic and land uses are interrelated, so any change in land use strategies will result in changes in the traffic volumes along the corridor. (Build-out projections are used by policy makers to assess the potential consequences of present policies and to guide in the development of new policies.) Projections used in the Boston Road corridor Study consist of three key elements: (1) an estimate of the amount of future development; (2) an estimate of traffic generation as a result of that future development; and (3) an analysis of the impact those additional trips will have on the corridor.

3.20 OVERVIEW OF BUILD-OUT SCENARIO METHOD

3.21 Description of Land Use Build-Out Scenarios

There are two build-out scenarios for one target year (2010). Build-out Scenario #1 is Existing Conditions Analysis. Build-out Scenario #2 is Modified Conditions Analysis. The build-out scenarios will focus on five corridor segments. The corridor segments are defined as follows:

Segment # 1 - Breckwood Boulevard to Harvey Street
Segment # 2 - Harvey Street to Kent Street
Segment # 3 - Kent Street, Springfield to Stony Hill Road, Wilbraham
Segment # 4 - Stony Hill Road to Cottage Street
Segment # 5 - Cottage Avenue to Three Rivers Road

These build-out analyses are summarized below.

Scenario #1 Existing Conditions Analysis

The conditions quantified in Scenario #1 are considered the most likely to occur based on the recent past history of the corridor. In the Springfield portion of the corridor study area, the relatively limited availability of vacant land may cause future development to take a more intensified form. In the absence of land use policies which limit further development of already developed sites, the future demand for additional development may not necessarily limit the amount of new development in Springfield.

The Wilbraham portion of the corridor study area has significantly more buildable land available for new development. This could result in less intense development than in Springfield. More sprawled commercial development could nevertheless significantly increase traffic volumes on Boston Road.

The Existing Conditions Analysis projects the amount of development which could occur in the study area over a specified number of years based on historical trends. The analysis then assigns a trip generation rate to that development, and totals the number of new trips resulting from the projected development. A straight line projection was made for the year 2010 based on the number of building permits and the square foot increase of each land use type for the years 1986 to 1990 (a moderate rate of development for the corridor).

Scenario #2 Modified Conditions Analysis

The Modified Conditions Analysis uses the projections developed in Scenario #1 (Existing Conditions) as a base line. Scenario #1 projections assume that no land use regulation changes will occur. Scenario #2 modifies the projected trip generation amounts developed in Scenario #1 as a result of implementation of recommended land use strategies in Section 4.10. The land use strategies that will have a direct impact on the number of trips generated within the Boston Road Corridor include: establishing a Floor Area Ratio along the corridor; adopting trip reduction strategies; and providing incentives to encourage transit use and limiting traffic generating uses along the corridor.

3.22 Build-Out Method for Build-Out Scenario #1

This section explains the procedure used to determine the final results of the Build-out Scenario #1. The Tables containing the calculations are shown in Appendix 3A.

Scenario #1 used the number of building permits issued for new construction on the Boston Road Corridor between 1986 and 1990 to provide an index of the amount of new development. This development rate index is broken down into residential and non-residential uses. The development rate index is then applied to the statistical estimation of trips generated from existing development. After subtracting out the amount of trip generation which is attributable to pass-by trips, the scenario calculates a projected total average daily motor vehicle trips which will be generated by the end year 2010.

3.23 Build-Out Method for Build-Out Scenario #2

This section explains the procedure used to determine the final results of the Build-out Scenario #2. The Tables containing the calculations are shown in Appendix 3A.

Scenario #2 reduced the number of average daily vehicle trips projected to be generated by the year 2010 by eliminating trips generated from those parcels where existing development exceeds a Floor Area Ratio limit of 0.2. Scenario # 2 also reduced the number of average daily vehicle trips projected to be generated by the year 2010 by determining the number of existing developments which would be required to prepare traffic impact statements and implement trip reduction plans because those developments are either larger than 10,000 square feet, or generate more than 700 vehicle trips per day.

3.30 LAND USE CONCLUSIONS

Recent development trends along the Boston Road Corridor indicate that there will probably be significant increases in the number of average daily trips generated from new development by the year 2010. If the corridor sustains development similar to the period from 1986-1990, average daily trips will increase by 31% along the corridor as a whole. (See Table 3.3-1.)

The most significant increase will occur in Segment 4, where the number of daily trips are likely to increase by 66%, unless additional land use control measures are introduced in the near future. By limiting the Floor Area Ratio of development in the commercial zoning districts adjacent to Boston Road to 0.2 and requiring traffic impact statements and trip reduction plans for large developments (over 10,000 square feet) or high traffic generating new uses (above 700 new projected average trips per day) the *increase* in the projected average daily trips could be limited to 5.1% in Segment 4. Segment 4 has the greatest potential for additional commercial development because there are three large significant commercially zoned land areas which do not have any environmental constraints. The first area is located around the existing post office. This area is zoned for industrial and mixed uses. Another area zoned for industrial and mixed uses, is located on the west side of Railroad Avenue. The third area is immediately southwest of the post office, on the south side of Boston Road, and is zoned Limited Business (LB). The uses presently allowed in the LB district, wholesale trade and manufacturing, typically do not generate a high number of vehicle trips.

Recent development trends also indicate that significant increases in average daily trips will be generated from Segment 2. Since there is significantly less land area available for new development in Segment 2, additional trips will be generated from infill development on already partially developed parcels, and from intensification of existing uses. The implementation of two proposed land use regulation recommendations could reduce the projected increase in the number of average daily trips resulting from projected new development. These measures have the potential to limit the *increase* in average daily trips to 4.5% in Segment 2. The projected reduction in future average daily trips could be gained from a relatively few development projects. In Segment 2, for example, large development projects, those with a floor area ratio greater than 0.2, constitute only 26% of all of the parcels in that segment. These projects contain 64% of the developed floor space and contribute to the majority of the traffic. Large commercial development projects contribute a disproportionate amount of traffic compared to land area. Control over large development projects would reduce future traffic volumes.

Build-out analyses should not be used to predict where or when a specific development will occur. The most important result to be gained from a build-out analysis is to quantify past trends, project future trends, and to quantify potential impacts. The potential impacts of increased trips on traffic patterns along the corridor are contained in an analysis of the movement of traffic along the corridor and the operation of key intersections based on those elevated values. This analysis is presented in Section 3.40 of the report.

Table 3.3-1
Projected Increase in Average Daily Trips (ADT)

Municipality	Corridor Segment	Current Trips Generated from Existing Development	Increase in ADT Under Scenario # 1	Percentage Increase of Scenario # 1 Over Existing Conditions	Increase in ADT Under Scenario # 2	Percentage Increase of Scenario # 2 Over Existing Conditions
Springfield	1	12,696	736	5.8%	192	1.5%
Springfield	2	94,082	13,693	14.6%	4,249	4.5%
Springfield-Wilbraham	3	13,125	424	3.2%	355	2.7%
Wilbraham	4	55,965	36,635	65.5%	28,605	5.1%
Wilbraham	5	614	175	28.5%	0	-
	Total Of All Segments	177,599	51,663	31%	33,401	18.8%

3.40 TRANSPORTATION BUILD-OUT ANALYSIS

The focus of this section is to identify the potential impacts of the estimated future traffic conditions on the Boston Road corridor as a result of Build-Out Scenarios 1 and 2. This analysis includes an estimate of future roadway conditions without the future build-out volumes, the assignment of the expected 2010 PM peak hour traffic as a result of both Build-Out scenarios to the future roadway network, a discussion of the proposed future roadway improvements along the Boston Road corridor, and the presentation of the expected future roadway conditions as a result of the two Build-Out scenarios.

3.41 Background Traffic Growth

Traffic volumes throughout an area will tend to increase over time as a result of normal growth due to future development outside of the study area and increases in population. An estimate of the background growth rate can be made based on past trends in historical traffic count information along the Boston Road corridor. Traffic counts conducted by PVPC show that traffic on Boston Road in Springfield and Wilbraham has actually decreased slightly from 1991 to 1994. While studies conducted within the area have used background growth rates as high as 2.5% per year, a lower growth rate of 1% per year was chosen due to the high percentage of site specific growth estimated as part of the two Build-Out scenarios.

3.42 Build-Out Traffic Assignment

The Build-Out traffic assignment was performed for the 2010 PM peak hour. The PM peak hour was chosen because both Build-Out Assignments were based on the average daily trip generation rates of the anticipated future development along the corridor. While some land uses, such as supermarkets, may generate more trips during the Saturday peak hour, the information available on daily trip rates on a weekend are more limited, and are substantially lower for land uses such as an office park. The PM peak hour, on average, results in the greatest trip generation rates over the course of the day.

The daily traffic volume increases developed for the two build-out scenarios were used to estimate the increase in 2010 PM peak hour traffic. This estimate was made through the use of a "K" factor or the percentage of daily traffic occurring during the peak hour. The K factor was developed by dividing the average PM peak hour traffic volumes along the Boston Road corridor by the average daily traffic volume along the corridor. This resulted in a K factor of 0.1036 or 10.36%. The projected increase in PM Peak Hour traffic as a result of the two Build-Out scenarios is shown on Table 3.4-1.

Table 3.4-1
Trip Generation - PM Peak Hour

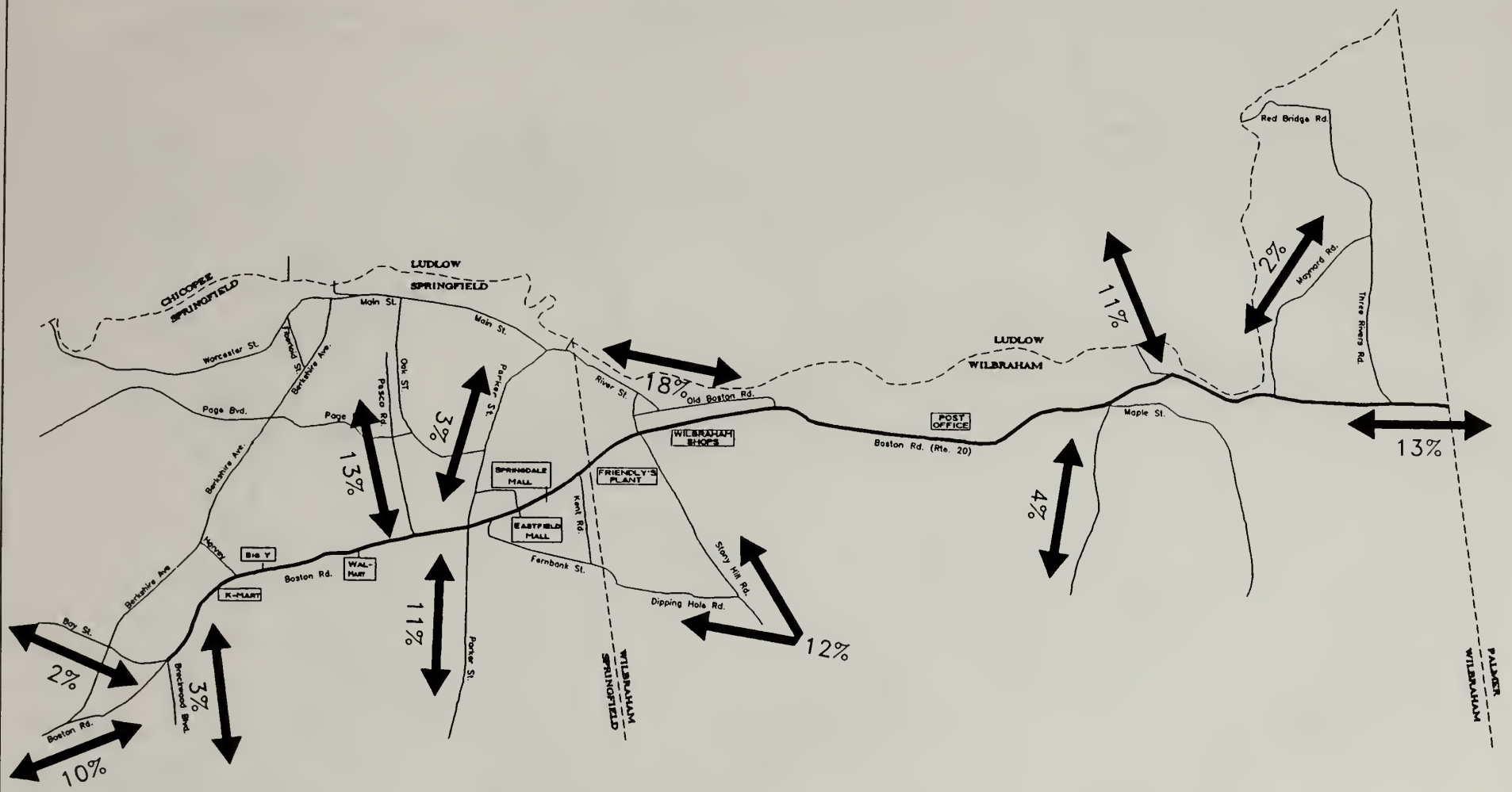
Segment	Build-Out Scenario #1	Build-Out Scenario #2
1	76	20
2	1420	440
3	44	38
4	3796	2964
5	18	18
Total	**5354**	**3480**

These values were applied to the 2010 No Build network using the trip distributions developed for each of the five segments. The trip distribution patterns were developed through research of several EIR's and traffic studies conducted along the corridor. Future trips were also assigned based on the existing traffic volume splits at each intersection along the corridor. Due to the high potential for growth in Segment 4, a large portion of traffic was assigned to the Massachusetts Turnpike exits in Palmer and Ludlow. The trip distribution is shown on Figure 3.4-1. The estimated future traffic volumes as a result of Build-Out Scenarios 1 and 2 are shown on Figures 3.4-2 and 3.4-3 respectively. A comparison of the expected future traffic volume increases is shown on Table 3.4-2.

3.43 Future Roadway Conditions

Several documents were researched in order to determine all currently proposed improvements along the Boston Road corridor. These documents include:

- Pioneer Valley Planning Commission's Transportation Improvement Program, 1994
- Boston Road Traffic Operations and Improvements ENF, Baystate Environmental Consultants, August 1994
- Boston Road Corridor Study, Vanasse, Hangen, Brustlin, Inc. June 1993
- Bloomfield Plaza FEIR, Keyes Associates, October 1989
- Stony Hill Shops FEIR, Champagne Associates, June 1988



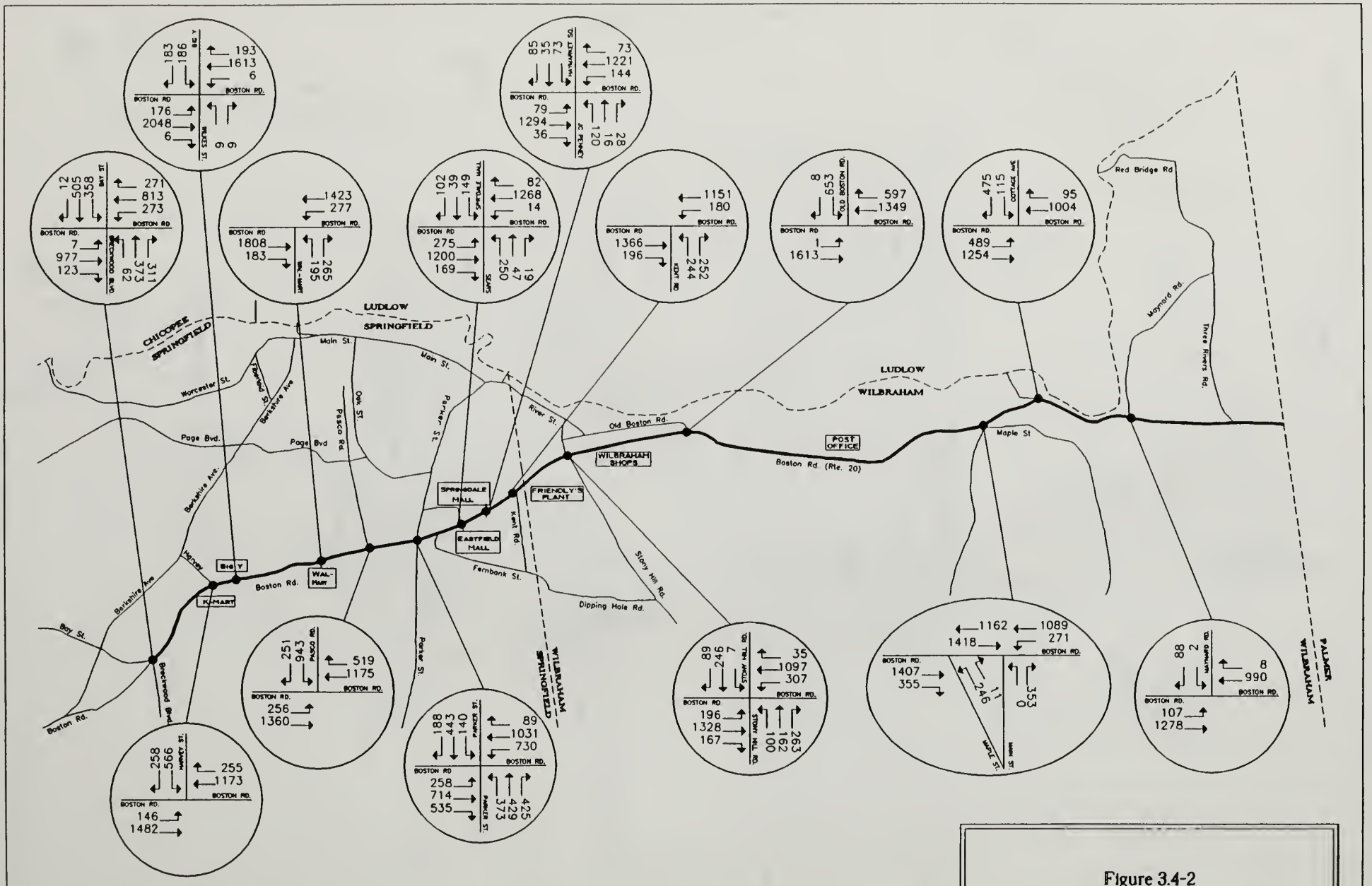
Boston Road Corridor Study
Springfield - Wilbraham

Prepared By -
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
1994

Scale
1 0 1 mile

Figure 3.4-1

BUILD-OUT
TRIP DISTRIBUTION



Boston Road Corridor Study

Springfield - Wilbraham

Prepared By -
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
1994

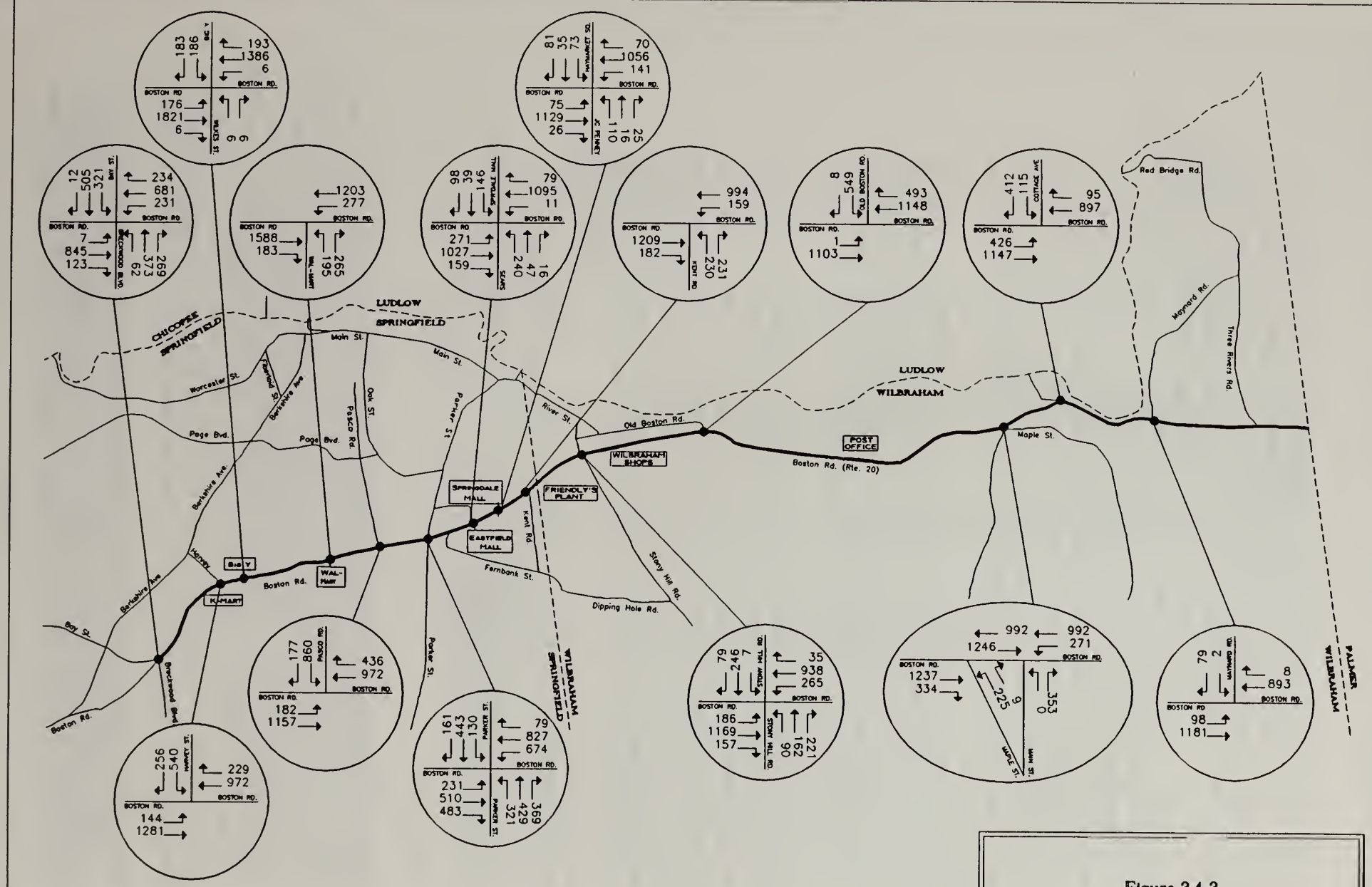
*NOTE - Includes 1% Background Growth Rate Per Year

Scale
1 0 1 mile

Figure 3.4-2

TURNING MOVEMENTS 2010 BUILD-OUT #1

PM Peak Hour



Boston Road Corridor Study
Springfield - Wilbraham

Prepared By -
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
1994

*NOTE - Includes 1% Background Growth Rate Per Year

Scale
1 0 1 mile

Figure 3.4-3

TURNING MOVEMENTS
2010 BUILD-OUT #2
PM Peak Hour

Table 3.4-2
Future Traffic Volume Increases

Boston Road	Existing PM Peak Volume	2010 No Build PM Peak Volume	2010 Build-Out #1 PM Peak Volume	2010 Build-Out #2 PM Peak Volume	Difference Between Build-Out #1 and Build-Out #2
west of Bay Street	1264	1482	1994	1730	264
east of Bay Street	1926	2259	3003	2581	422
west of Harvey Street	1991	2335	3059	2653	406
east of Harvey Street	2287	2682	3476	3022	454
west of Pasco Road	1784	2092	3042	2488	554
east of Pasco Road	2401	2815	3997	3425	572
west of Parker Street	1664	1951	3099	2533	566
east of Parker Street	1494	1751	3129	2589	540
west of Kent Street	1580	1853	2957	2615	342
east of Kent Street	1442	1691	2949	2593	356
west of Stony Hill Road	1469	1723	2977	2619	358
east of Stony Hill Road	1249	1465	3037	2635	402
west of Old Boston Road	1193	1399	2971	2260	711
east of Old Boston Road	1443	1692	4212	3293	919
west of Maple Street	1406	1648	3170	2788	382
east of Main Street	1592	1868	3131	2862	269
west of Cottage Street	1609	1886	3222	2882	340
east of Cottage Street	1450	1700	2468	2254	214
west of Maynard Street	1448	1697	2463	2251	212
east of Maynard Street	1353	1586	2278	2084	194

The following presents a description of the proposed improvements currently being considered within the study area.

Springfield

Reconstruction of Boston Road from Berkshire Avenue to Pasco Road. The portion of Boston Road from Berkshire Avenue to Pasco Road (2.25 miles) will include upgrading travel lanes, intersection improvements and installation of sidewalks along both sides of the corridor. The segment of Boston Road between Berkshire Avenue and Harvey Street will include two 12 foot travel lanes in each direction. The segment from Harvey Road to Pasco Road will include a 14 foot 2-way shared center left turn lane and two 12 foot travel lanes in each direction. There will be a six foot wide sidewalk paralleling each side of the roadway separated by a two foot shoulder from the adjacent travel lane.

The four way intersection of Bay Street, Breckwood Boulevard and Boston Road will be realigned adding a westbound exclusive left turn lane in addition to the existing two through travel lanes. The eastbound direction will continue to provide two travel lanes.

The southbound approach (Bay Street) will accommodate a left turn lane and one shared through/right turn lane, while the northbound (Breckwood Boulevard) approach will include a right turn lane and have left turns restricted during the peak period from 4 - 6 PM. Modifications will also be performed to signal phasing and timing, including an exclusive pedestrian phase.

An exclusive left turn lane will be constructed along the eastbound approach of Boston Road at its intersection with Pasco Road Both the eastbound and westbound approaches will continue to provide two through travel lanes. The southbound approach (Pasco Road) will provide two left turn lanes and one right turn lane. Crosswalks will be installed on all approaches, and modifications will be done to existing signal timing, including the installation of pedestrian actuated signals.

The eastbound approach of Boston Road at its intersection with Harvey Street will be reconfigured to include an exclusive left turn lane and a through lane. The westbound direction will provide a through and right turn lane. Exclusive left and right turn lanes will be installed on the Harvey Street approach to the intersection. A new signal phasing and timing plan will be installed, which includes pedestrian actuated signals.

Additional improvements along the Boston Road corridor include the replacement of the temporary traffic signal at Slater Avenue with a new signal with pedestrian phase capabilities. A new traffic signal will also be installed along with a westbound left turn lane on the eastbound approach of Boston Road at its intersection with Fargo Street. Adjacent traffic signals along the corridor from Pasco Road to Berkshire Avenue are scheduled to be coordinated and signal hardware will be replaced as needed. Sidewalks will be installed along both sides of the corridor, and existing driveways will be consolidated.

Reconstruction of the Pasco Road Bridge Over Conrail. This activity will include widening of the bridge over the Conrail rail line to increase its travel lane widths to that of the approaches. In addition to this, 700 feet of approach roadway along each side of the bridge will be resurfaced. There will be no alterations made to the intersection of Pasco Road and Boston Road due to this project.

Reconstruction of Parker Street From Boston Road to Main Street. This will include resurfacing Parker Street from its intersection with Boston Road to Main Street. Parker Street will continue to have four travel lanes from Boston Road to Oak Street and two travel Lanes from Oak Street to Main Street. Signals will be installed at the intersections of Parker Street with Oak Street and Verge Street. No improvements are currently planned for the intersection of Parker Street and Boston Road.

Wilbraham

Intersections of Main Street and Maple Street with Boston Road. The existing "three-way" intersections of Main Street and Maple Street with Boston Road will be reconstructed and resurfaced. The intersection of Main Street and Boston Road will include one 14 foot travel lane in each direction along Main Street separated by a small

island at the Boston Road junction. The eastbound approach of Boston Road will have one 18 foot through travel lane and the westbound approach will have one 10 foot through lane in addition to an exclusive 11 foot exclusive left turn lane.

The "three-way" intersection of Maple Street and Boston Road will include a 15 foot travel lane in each direction along Maple Street separated by granite rubble pavement at the Boston Road junction. The eastbound and westbound approaches of Boston Road will have two travel lanes in each direction. The portion of Boston Road between Main Street and Maple Street will have two travel lanes in each direction separated by a granite rubble pavement island. Both the Main Street and Maple Street intersections will operate under "STOP" sign control.

The four way intersection of Main Street and Maple Street south of Boston Road will be realigned with one approach lane in each direction controlled by "STOP" signs at the Main Street approaches. The westbound (Maple Street) approach will be widened having a granite rubble island to channel vehicles through and right onto Main Street southbound.

Intersection of Stony Hill Road and Boston Road. This intersection was scheduled for improvements as part of the proposed "Stony Hill Shops". However, the project was never built and the intersection improvements never made.

Recently, a Notice of Project Change was filed for the "Stony Hill Shops project. A new developer has proposed a 12-screen cinema complex for the site. As part of the mitigation plan, the developer has agreed to pay for 100% of the design of the intersection and to also commit money to help offset the costs of construction. The intersection is currently in the design stage and is expected to undergo construction in the near future.

Stony Hill Shops Site Access Driveway. Plans for the proposed "Stony Hill Shops" included a four-way signalized intersection consisting of the eastbound and westbound approaches of Boston Road, the proposed site drive, and a shared access drive to the "Ski In" and "Theos". Currently, the plans for the proposed cinema complex do not call for the site drive to be signalized. A detailed traffic signal warrants analysis is being conducted as part of a traffic impact study for the project. A decision on the need for a traffic signal at this intersection will be made pending the results of this study. The Pioneer Valley Planning Commission has recommended that the necessary traffic signal conduit be installed at this location during the construction of the Boston Road/Stony Hill Road intersection to facilitate the installation of a future traffic signal.

Cordelia Circle and Boston Road. Preliminary construction has been completed for the proposed Bloomfield Plaza, to be located on the segment of Boston Road between Cordelia Circle East and Cordelia Circle West. Cordelia Circle currently serves the U.S. Post Office in this area. Upon full build out of the project, Boston Road will be widened on the north side from 36 feet to approximately 54 feet. Each of the two intersections with Boston Road will be controlled by interconnected fully actuated traffic control signals.

Boston Road at Cordelia Circle East and Hunter Street will consist of a four way intersection with Boston Road operating as the major street. The westbound (Boston Road) approach will include left, right and through lanes each of 12 foot width. The eastbound (Boston Road) approach will include a 12 foot left turn lane and a shared 15 foot through and right turn lane. The Cordelia Circle East entrance will include two 20 foot travel lanes and the northbound (Hunter Street) approach will include a 12 foot shared through, left and right turn lane.

Boston Road at Cordelia Circle West and White Street will consist of a four way intersection with Boston Road operating as the major street. The westbound (Boston Road) approach will include a 15 foot shared through and left turn lane. The eastbound (Boston Road) approach will include a 12 foot through lane and a 15 foot shared through and right turn lane. The southbound (Cordelia Circle West) approach will include a 14 foot shared through and left turn lane, a 12 foot right turn lane and a 14 foot right turn lane. The northbound (White Street) approach will have a 12 foot shared through, left and right turn lane.

3.44 Level of Service Analysis

The future capacity analysis was conducted for each of the intersections analyzed as part of Section 2.111. All intersections were analyzed for both Build-Out Scenarios assuming all proposed improvements along the Boston Road corridor will be in place. Another basic assumption used throughout the analysis was the optimization of signal timings to yield the best possible Level of Service at each location. The reader is referred back to Table 2.11-1 for a description of Level of Service. A comparison of the Level of Service for each signalized intersection is provided on Table 3.4-3. A comparison of the Level of Service for each unsignalized intersection is provided on Table 3.4-4.

As exhibited by the tables, the majority of the intersections operate at poor Levels of Service under Build-Out #1 conditions. The reduction in traffic provided under Build-Out #2 results in acceptable Levels of Service at all but two of the signalized intersections. Again, it should be noted that no geometric improvements were considered at any intersection other than those identified above. Due to the length of the Build-Out period (16 years), signal timing changes were assumed to occur at most of the study area intersections as part of routine maintenance. Notwithstanding, the construction of additional turning lanes may be necessary in the future at some of these locations in order to continue to provide safe, efficient traffic flow at these intersections.

Table 3.4-3
Signalized Intersection Level of Service

	Build-Out #1			Build-Out #2		
	Approach	Intersection	Delay*	Approach	Intersection	Delay
Bay St. / Breckwood Blvd.						
Northbound	E	E	54.2	F	D	37.3
Southbound	F			F		
Eastbound	F			C		
Westbound	C			B		
Harvey Street						
Southbound	F	F	82.2	E	D	40
Eastbound	B			B		
Westbound	F			F		
Big Y Access Drives						
Northbound	C	F	141.8	C	F	68
Southbound	E			E		
Eastbound	F			F		
Westbound	F			D		
WalMart Access Drive						
Northbound	C	E	54	C	D	26.4
Eastbound	F			D		
Westbound	B			B		
Pasco Road						
Southbound	E	E	46.1	D	C	20.1
Eastbound	C			B		
Westbound	F			C		
Parker Street						
Northbound	F	F	94.9	E	E	45.8
Southbound	D			D		
Eastbound	E			C		
Westbound	F			E		
Sears Access Drive						
Northbound	D	F	86.56	D	E	46.9
Southbound	D			D		
Eastbound	C			C		
Westbound	F			F		
JC Penney Access Drive						
Northbound	C	D	32.9	C	C	20.9
Southbound	C			C		
Eastbound	E			C		
Westbound	D			C		
Kent Street						
Northbound	D	F	76.7	D	D	27.8
Eastbound	F			C		
Westbound	F			D		
Stony Hill Road						
Northbound	F	F	100.2	F	E	47.9
Southbound	F			F		
Eastbound	F			D		
Westbound	E			D		
Old Boston Road						
Southbound	F	F	171.3	F	F	70.9
Eastbound	F			E		
Westbound	F			F		

* In seconds
** Boston Road runs in an East/West direction

Table 3.4-4
Unsignalized Intersection Level of Service

		Build-Out #1		Build-Out #2	
		LOS	ARC*	LOS	ARC
Maple Street					
Northbound	Left	F	-227	F	-223
	Right	C	266	B	317
Westbound	Left	D	129	D	129
Main Street					
Northbound	Right	F	-6	E	78
Westbound	Left	F	-155	F	-86
Cottage Street					
Southbound	Left	F	-119	F	-119
	Right	F	-209	F	-101
Eastbound	Left	F	-170	F	-60
Maynard Street					
Southbound	Left	E	27	E	29
	Right	D	167	C	221
Eastbound	Left	C	241	C	298

* ARC = Available Reserve Capacity
** Boston Road runs in an East/West direction

Based on the results of the Level of Service analysis, it appears that the future traffic generated under Build-Out #2 will have a significantly less impact on the Boston Road corridor than Build-Out #1. The Land Use Strategies set forth in this document are designed to effectively control and manage traffic growth along the Boston Road corridor.

3.45 Safety Analysis

Accidents were researched along the Boston Road through the Massachusetts Highway Department, Springfield Police Department and Wilbraham Police Department records. As a result of this research, several locations were identified which experience high accident rates. The intersection of Boston Road with Parker Street has a high percentage of "rear end" and "angle" type collisions. The westbound approach of Boston Road was restriped during the fall of 1994 to correctly align with the departure lanes of the intersection. This should result in a reduction in "angle" and "sideswipe" collisions along the approach. In addition, the high volume of right turning traffic at this location experiences difficulty in entering the traffic stream. The installation of right turn acceleration lanes or additional right turn arrows could help reduce this problem.

A large percentage of crossing movement or angle collisions were recorded at the intersection of Boston Road with Stony Hill Drive. The lack of exclusive turn lanes is the main contributor to the high accident rate at this intersection. The proposed improvements at this intersection should help to reduce the current accidents rate.

As mentioned previously, comments received from the Springfield Police Department indicate that the number of accidents occurring along Boston Road from its intersection with Pasco Road to its intersection with Breckwood Boulevard are higher than the number researched through MHD records. This accident experience is a result of the high operating speeds, traffic volumes and the large number of wide-open site drives along the roadway. This section of Boston Road is currently scheduled for reconstruction as part of the 1996 Transportation Improvement Program (TIP). As part of this project, the roadway will be widened to a consistent four lane section, and exclusive turning lanes constructed at many intersections. A new traffic signal is proposed at the intersection with Fargo Street which should greatly reduce the number of accidents at this intersection. In addition, all traffic signals from Pasco Road to Berkshire Avenue will be coordinated. This improvement will increase safety by reducing the travel speed along the corridor and creating larger gaps for traffic exiting from unsignalized intersections.

Upon completion of this project, the City of Springfield should monitor this corridor on an annual basis to ensure that safe, efficient travel is provided.

4.0 RECOMMENDED STRATEGIES

4.10 RECOMMENDED LAND USE STRATEGIES

4.11 Summary of Land Use Strategies

The following is a brief summary of the land use recommendations which are described in detail in Sections 4.12 through 4.14.

Recommendations for Springfield and Wilbraham

#1 Create a Planned Mixed Use Development Zone

#2 Develop a Network of Bicycle/Pedestrian Circulation Paths

#3 Upgrade Local Sign Regulations

#4 Improve Municipal Parking and Landscaping Regulations

#5 Improve Performance Standards for Commercial and Industrial Uses

#6 Encourage Transit Use

Recommendations Specific to Springfield

#7 Identify Sites for Urban Infill Redevelopment

#8 Adopt Site Plan Approval Procedure

Recommendations Specific to Wilbraham

#9 Improve Sewer Capacity

#10 Create a River Protection District

4.12 Recommendations for Both Springfield and Wilbraham

Problem: Proliferation of Low-Density Commercial Sprawl Along the Corridor

Boston Road Corridor Action #1 - Create a Planned Mixed Use Development Zone

Springfield and Wilbraham should develop and adopt a "Planned Mixed Use Development Zone," which would replace or overlay the following existing zoning districts in the Boston Road corridor area:

Springfield	Business A and Business B zones
Wilbraham	Limited Business, General Business, and Industrial-Professional Office-General Business zones

as illustrated on Figure 4.1-1 entitled "Proposed Planned Mixed Use Development" zone.

a. PURPOSE

The purpose of this zone would be to: (a) promote well-planned development and re-development projects; (b) encourage on-site housing for large commercial developments; (c) minimize and mitigate traffic impacts on the Boston Road corridor; (d) create incentives for businesses to help meet community goals such as easy transit access and circulation paths for bicycles and pedestrians along the corridor.

b. DEFINITION OF PLANNED MIXED USE DEVELOPMENT

A Planned Mixed Use Development allows a variety of business, retail, office, and service uses to be consolidated on a single site, thereby reducing the number of curb cuts that normally would be necessary for each individual use. A Planned Mixed Use Development (PMUD) is defined as a development of land that is under unified control and is planned and developed as a whole in a single development operation or a definitely programmed series of development operations or phases. This means that a PMUD is built according to general and detail plans that includes streets, utilities, lots and building locations, as well as site plans for all buildings for all development phases and plans for other uses and improvements on the land. By encouraging PMUDs, Springfield and Wilbraham can eliminate the type of low-density commercial sprawl that has developed along the Boston Road Corridor.

c. PERMITTED USES

Uses Permitted With Site Plan Approval

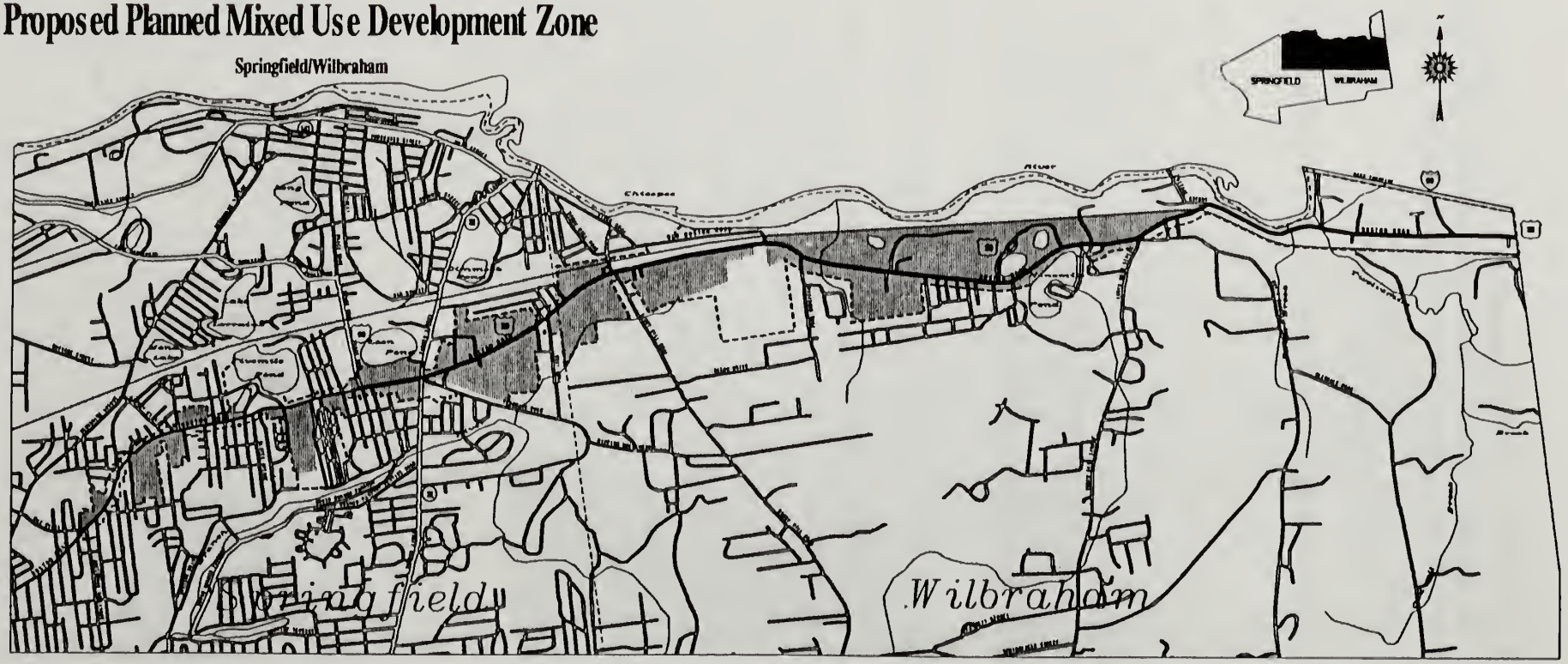
Springfield: In order to ensure that the purposes of this new zoning district are met, the Planning Board should adopt a Site Plan Approval process. The following uses would require site plan approval: Multi-family dwellings, Retail Uses (such as: retail stores; retail service store or custom store; hotel; motel; restaurants without a drive-through window), Office Uses (such as: office or studio building; telephone central office; bank or financial institution), Service Uses (such as personal service shop; undertaking establishment; trade school) and a Planned Mixed Use Development (PMUD).

Wilbraham: Any existing uses which currently require Site Plan Approval in the underlying zoning district would continue to need site plan approval. In addition, a Planned Mixed Use Development (PMUD) would also require site plan approval.

Boston Road Corridor Study

Proposed Planned Mixed Use Development Zone

Springfield/Wilbraham



Study Area Boundary

Planned Mixed Use Development Zone

Scale

1/2 0 1 mile

1000 0 8000 feet

Prepared by:

-Pioneer Valley Planning Commission
26 Central Street, West Springfield, MA 01089, August, 1994

in cooperation with:

-Massachusetts Executive Office of Transportation and Construction
-Federal Highway Administration
-Federal Transit Administration

Digital data from:

-Massachusetts Executive Office of Environmental Affairs, MassGIS
-Massachusetts Highway Department
-Pioneer Valley Planning Commission

This map represents the best available data and is for planning purposes only.

Uses Permitted By Special Permit in Springfield and Wilbraham

Uses currently requiring special permit in the underlying districts of Springfield and Wilbraham shall continue to require a special permit EXCEPT restricted uses. Restricted uses are only permitted in a PMUD.

Restricted Uses in Springfield and Wilbraham

The following uses are only permitted by Site Plan Approval as part of a Planned Mixed Use Development:

- convenience markets
- motor vehicle service stations
- drive-in banks
- automatic teller machines
- restaurants with drive-through windows in Springfield only; prohibited in Wilbraham
- fast food restaurants in Springfield only; prohibited in Wilbraham

By restricting these high-volume traffic generating uses to only PMUDs, the Planning Boards in Springfield and Wilbraham are consolidating the number of curb cuts to and from the shopping area and are reducing chances for traffic congestion along the corridor.

Uses Permitted by Right

Springfield: Uses permitted by right would include single-family dwellings, two-family dwelling units, and governmental/institutional uses such as schools, religious uses, daycare centers, etc.

Wilbraham: Uses permitted by right would include agricultural uses on more than 5 acres, commercial greenhouses, conservation land, forestry and municipal buildings.

d. DEVELOPMENT INTENSITY

Maximum number of uses permitted per parcel: No more than one office, retail or service use is permitted per parcel. If a developer wishes to have multiple uses on one parcel he must construct a Planned Mixed Use Development.

Maximum floor area ratios: The Floor Area Ratio (FAR) is the ratio of total gross building floor area to the area of the development parcel. For example, if a two-story building with 10,000 square feet on each floor were located on a one-acre lot, the FAR would be 20,000 to 40,000, or .5. In zoning ordinances, the FAR can regulate the size of development, similar to other dimensional standards.

FAR of existing development in the Boston Road Corridor = .074

National average FAR for suburban office complexes = .29
Maximum FAR in Route 9 corridor zoning in Worcester County = .2
Maximum FAR in Loudon County zoning in Virginia = .4

It is recommended that Springfield and Wilbraham adopt a standard maximum FAR of 0.2, which could be exceeded only in cases where proposed developments earn performance credits for project amenities which meet community goals.

Square footage limitations for high-volume traffic generating uses. Those restricted uses classified as high-volume traffic generating uses permitted only in a PMUD shall be restricted to a total of fifteen (15) percent of the total gross floor area of the development.

Maximum building heights. The current maximum building height in the Business A district in Springfield is four stories or 60 feet. The current maximum building height in Wilbraham's General Business district is 40 feet. Most of the buildings constructed along the corridor do not exceed two stories. It is recommended that Springfield and Wilbraham adopt a uniform standard of two (2) stories maximum building height. This stand could be exceeded for projects which earn performance credits for project amenities meeting community goals.

Maximum Lot Size for Planned Mixed Use Developments

Springfield. There is no minimum lot space requirement because there is very little vacant land available for development.

Wilbraham. Because there is vacant land available, a minimum lot size of 2 1/2 acres is required for PMUDs.

e. DEVELOPMENT STANDARDS

To avoid a commercial strip appearance and to decrease opportunities for traffic congestion along the corridor, development standards are necessary. The following development standards are required in order for any project to receive local Site Plan Approval or Special Permit for all business uses:

- interior parking lot landscaping requirements
- parking lot placement standards
- screening and buffering standards for parking lots and the development perimeter
- traffic mitigation measures
- shared parking facilities for abutting uses
- environmental performance standards
- architectural and design standards
- circulation paths inside the project for bicycles and pedestrians

Additional standards for large-scale projects and Planned Mixed Use Developments will include the provision of on-site housing and trip reduction measures. By providing on-site housing, there is the possibility that some of the housing units will be occupied by people who work at the PMUD or project site. As a result, there are less overall auto trips generated because there will be fewer work trips generated. Large PMUDs and project developments provide the economies of scale necessary to make these standards affordable.

f. PERFORMANCE CREDITS

The new zoning bylaw/ordinance should provide opportunities for business projects and Planned Mixed Unit Developments to earn performance credits for project amenities which meet community goals. Performance credits could be used to achieve incentives, as described below. Credits could be earned for:

- the provision of on-site affordable housing
- the construction of circulation paths for bicycles and pedestrians along the corridor
- the inclusion of easy transit access within the development
- the preservation of open space
- the construction of multi-level parking deck

g. INCENTIVES

The new zoning bylaw/ordinance should provide incentives for development projects and Planned Mixed Use Developments to earn performance credits. For projects which earn sufficient performance credits by meeting community goals described above, the following incentives should be offered:

- increased Floor Area Ratios
- reduced parking requirements
- building height bonuses

Problem: Lack of Bicycle and Pedestrian Circulation Along the Corridor Between the Corridor and Surrounding Neighborhoods, and Within Shopping Centers and Other Large Developments

Boston Road Corridor Action #2 - Develop a Network of Bicycle/Pedestrian Circulation Paths

Along the Corridor and Between Surrounding Neighborhoods: There are limited areas with sideways along some of the corridor in Springfield, while there are no sidewalks along the corridor in Wilbraham. In addition, there are no links between abutting neighborhoods and corridor uses in both communities. Motor vehicle use is almost mandatory to move from residential areas to commercial areas.

In order to reduce the number of vehicle trips along the corridor, Springfield and Wilbraham must develop a more pedestrian-friendly environment and add pedestrian/ bicycle pathways. This could be achieved by either: (a) a petition submitted to the Massachusetts Highway Department to include sidewalks in their right-of-way; (b) each municipality can assume the cost of sidewalks directly and construct the sidewalk itself, or (c) each municipality could establish a betterment district to finance the construction of a parkway along the corridor. Given the current financial circumstances of Springfield, Wilbraham and the Commonwealth, it is not likely that recommendations (a) and (b) will readily occur. The establishment of a betterment district may be the more secure way to finance the construction of a pathway.

To ensure that there will be no confusion between a bicycle/pedestrian pathway and the roadways, the municipalities should provide a distinct, raised pathway for walking and biking. In addition, the pathway should include landscaping, benches, plantings and buffers where possible. A strong corridor edge like a well defined bicycle/pedestrian pathway would result in increased pedestrian and bicycle activity and reduced motor vehicle activity.

Within Shopping Centers and Other Development: Often if there is a well-defined sidewalk for a pedestrian along the corridor's edge, the sidewalk disappears as the pedestrian enters into a shopping center. Once inside, the pedestrian has no safe route to travel within the shopping center. Pedestrian circulation systems linking the larger shopping buildings to smaller service buildings within the development and to the corridor's edge must be provided.

The Site Plan Approval process for Planned Mixed Use Development and larger developments should require bicycle/pedestrian circulation pathways within the development site. By providing a bicycle/pedestrian pathway, more and more people will opt for walking rather than driving from use to use within the development.

Problem: Roadside is cluttered with too many signs which are inappropriate in size, location and height.

Boston Road Activity #3 - Upgrade Local Sign Regulations

According to Daniel R. Mandelker and William R. Ewald, authors of Street Graphics and the Law, sign size, height and placement can be directly related to the number of lanes and the travel speeds of the highway. (See Table 4.1-1.) The greater the speed and the more lanes there are, the larger the sign size and height may be. However, there is an upper limit, for a sign that is too high or too large can fall out of a driver's peripheral vision at greater speeds and not be seen at all. In addition, maximum sign area and height limits should be established for reasons of traffic safety and aesthetics.

Table 4.1-1
Sign Dimensional Requirement for Commercial Uses

How Seen		Wall Sign Area	Projecting Area	Ground Sign Area	Ground Sign Height
Lanes	Speed		(Sq. Ft.)	(Sq. Ft.)	(Feet)
	Surrounded by Commercial or Industrial Districts				
2	15-25	40%	15	15	5
	30-40	40%	35	35	6
	45-50	40%	No	75	20
4	15-25	40%	20	0	6
	30-40	40%	50	50	18
	Surrounded by Institutional, Residential or Rural				
2	15-25	30%	10	10	5
	30-40	30%	20	20	6
	49-50	30%	No	50	16
4	15-25	30%	15	15	6
	30-40	30%	35	35	11

Source: Mandelker, Daniel R. and Ewald, William R. - Street Graphics and the Law 3rd Edition, 1988.

The Springfield sign ordinance and the Wilbraham sign bylaw could be improved by including the following:

- A complete definition of sign terminology, including sign types.
- A clear delineation of dimensional sign requirements in each district. In this case sign size would be directly linked to the zoning district, the average road speed, and the average number of lanes in the highway.
- A clear delineation of the types of signs permitted in each district.
- Maximum sign area and height standards should be tightened up. For example, in Herndon, Virginia, the maximum ground size in a commercial district is 50 square feet and with a maximum sign height of 12 feet.
- Illumination standards that included the prohibition of flashing or blinking lights.
- The prohibition of new billboards or non-accessory signs.

- The requirement that any sign replacing a non-conforming sign shall conform to the existing sign regulations and the non-conforming sign will no longer be displayed. Non-conforming signs should be amortized over a five year period.

Problem: To Reduce the Negative Impact of a "Sea of Asphalt" in Strip Developments Along the Corridor

Boston Road Corridor Action #4 - Improve Municipal Parking and Landscaping Regulations

Upgrade Parking Lot Landscaping Requirements. Parking lot area should be landscaped in order to better define a site's interior circulation system and improve vehicular and pedestrian safety. The following standards should be included in the existing parking standards for Springfield and Wilbraham:

- A percentage of a parking lot should be reserved for interior landscaping. The percentage required would be based on the size of the lot developed. The interior landscaping of lots shall include the planting of trees in order to break up the parking lot, separate it from the interior circulation system of the development, and create a canopy of trees.

- Establish landscaping units as a method of determining the types of vegetation required.

- Prohibit parking spaces from being located in the front yard requirement. Where possible, require parking lots to be located to the rear or side of commercial/industrial buildings.

- Establish a minimum size for all parking islands.

- Require interior traffic and pedestrian circulation plan for large developments.

- Require interior traffic and pedestrian circulation plan for large developments.

- All open parking lots for commercial and industrial uses must be screened from the view of adjacent properties and street to strengthen the distinction between roadway and parking lot.

Improve Landscaped Strip Requirements. Along some segments of the corridor, the line between the highway and the development have been blurred. Asphalt runs along the edge of the corridor, both in the right-of-way and on project sites with no visual distinguishing element to separate them for the motorist. A landscaped strip along a commercial corridor can create an identifying element of Boston Road Corridor, can strengthen the image of the pathway for motorists, making it more memorable for them; can add an aesthetic continuity to the variety of uses, and can create a safe corridor for pedestrians and bicyclists.

Landscaping along the right-of-way can separate the roadway from the site and define a boundary for a project. Springfield and Wilbraham should adopt landscaping standards for front yards along rights-of-way and side yards along rights-of-way. The front yard and side yards abutting right-of-way will serve as a transition area between the roadway and project site. The landscaping strip requirements should include standards for the types of planting required and may not include any paved surfaces with the exception of pedestrian sidewalks that cross the strip.

Problem: Insufficient Standards to Anticipate and Manage Traffic Along the Corridor

Boston Road Corridor Action #5 - Improve Performance Standards for Commercial and Industrial Uses

Require Traffic Impact Statements for Larger Developments and High Volume Traffic Generating Uses. The Boston Road Corridor is a growing commercial corridor which is heavily traveled. Land use and transportation are interrelated and the types of uses permitted along the corridor greatly influences the amount of traffic generated.

In Springfield and Wilbraham traffic impact statements should be required for high-volume traffic generating uses (which include convenience markets, motor vehicle service stations, drive-in banks, automatic teller machines, restaurants with drive-through windows and fast-food restaurants in Springfield); for the construction of a new multi-family, commercial or industrial structure of 10,000 square feet or more of gross floor area; and for the expansion or change in use of any multi-family, business or industrial structure of 10,000 square feet or more of gross floor area. By reviewing the expansion or change in any multi-family, business or industrial structure of 10,000 square feet or more of gross floor area, the Planning Board or City Council will have an opportunity to review the traffic impacts of any intensification of uses. With the information provided by the traffic impact statements the municipalities and developers could plan traffic mitigation measures to ease any traffic conflicts.

Adopt Trip Reduction Plan Requirements. The corridor is shared by shoppers en route to many of the retail establishments in the corridor and by employees who work along the corridor. Many of these motorists, particularly employees, travel alone in their vehicle to and from their destination. Traffic congestion is increased when each individual decides to take his or her own vehicle to the site.

Springfield and Wilbraham should adopt a trip reduction bylaw/ordinance which would require the preparation of a "Trip Reduction Plan" for any large commercial or industrial developments employing 50 or more persons. A trip reduction plan would be submitted to the Planning Board or City Council in conjunction with any required traffic impact statement. Trip reduction plans would require the development owner to provide strategies to reduce the amount of traffic generated by their project, particularly the traffic generated by the employees of the new project. The trip reduction plan should include:

- Carpooling/vanpooling incentive programs targeted toward employees
- Increased transit accessibility and improved service
- Bicycle and pedestrian incentive measures
- Variable work hour or flexible time programs for employees
- The creation of a transportation systems management coordinator position
- A report on the status of the trip reduction plan filed annually with the local department of public works and the building inspector

Establish Access Standards. With each new development along the corridor there is an increase in the number of driveways (e.g. access and egress points). A minimum of one driveway per log can result in an increase in the amount of traffic conflicts and congestion. By establishing access controls, a municipality encourages efficient and safe traffic along the corridor and into the developments along the corridor. Access standards should include:

- Limits on the number of curb cuts permitted by encouraging access via common driveways for adjacent lots, access via an existing side street or access via shared cul-de-sacs or shared loop road
- A maximum driveway width of 24 feet for commercial and industrial uses
- Driveway that provides safe site distances
- Allow one driveway per commercial/industrial use as a matter of right
- Assure safe interior circulation within a project site by separating pedestrian/bicycle traffic and vehicular traffic
- Provide a special permit process for larger developments to apply for multiple turning lanes as necessitated by the size of the development.

Problem: Too Many Single-Occupant Vehicles Travel the Corridor

Boston Road Corridor Activity #6 - Encourage Transit Use

Automobile vehicle-emissions contribute to air pollution and lessen the air quality. As more cars drive along the corridor, they increase the level of emissions in the corridor. One way to reduce the level of automobile emissions is to increase vehicle occupancy.

Site Design Incentives for Improved Transit Access. To encourage increased transit use, the Planning Board or City Council should provide incentives for developers of Planned Mixed Unit Developments or large projects to include on-site transit access in their developments. When planning a large development, developers should include a transportation loop that would accommodate transit service, a transit stop near the principal building in the development and pedestrian access linking the transit stop to the buildings within the development.

Establish a Maximum Parking Lot Requirement. Both Springfield and Wilbraham have established a minimum parking space per square footage ratio for a variety of residential, commercial and industrial uses. Usually developers of retail establishments will exceed the minimum number of parking spaces required to ensure that patrons will not have any

difficulty finding parking during the Christmas shopping season. This over-abundance of parking can create an incentive for patrons to use their automobiles.

The Planning Board and City Council should establish a maximum number of parking spaces required per use and/or development to encourage transit use and to induce adjacent developments to share parking lots. A maximum amount of parking requirement should be established for all uses in the proposed Planned Mixed Development district or for all developments exceeding 10,000 square feet in size.

4.13 Land Use Recommendations Specifically for Springfield

Problem: Intensification of an Already Developed Corridor

Boston Road Corridor Action #7 - Identify Site for Urban Infill Redevelopment and Attract Appropriate Development

A substantial portion of the Springfield segment of the Boston Road Corridor has been built-out with low-density commercial sprawl. Recently, the Springfield segment of the corridor has experienced revitalization and is in the midst of the intensification of some of its existing uses. For example, the site of the former Show-Off shopping plaza was recently replaced by a Walmart. This intensification of existing commercial uses is likely to continue in Springfield due to improved economic conditions which encourage the replacement of less profitable, low-density commercial uses with larger commercial developments.

By adopting the proposed Planned Mixed Use Development zone (see Boston Road Corridor Action #1), the City Council will have taken the first step toward establishing adequate controls to promote well-designed developments. However, the City Council could play a more active role in the development patterns along the Boston Road Corridor. The City Council could direct the Planning Board to identify sites in the corridor that are most likely to be the next intensification site. After identifying sites, the Planning Board could select the types of uses that are more appropriate for its reuse. The City could generate a vision for the development of the site and, most importantly, could institute a marketing strategy to aggressively promote its redevelopment plan to development entities. By selecting and targeting sites for appropriate intensification, Springfield could influence the development patterns along the Boston Road Corridor to reduce the traffic congestion and encourage well-designed redevelopment while improving its economic base.

For example, Kmart Corporation has announced its plans to close its Boston Road store. The existing Kmart site is at the western end of the corridor and does not appear to benefit from the retail traffic attracted to other portions of the corridor, despite its proximity to Interstate 291. The site would probably be a more appropriate location for a Planned Mixed Use Development with an office complex and on-site housing, instead of another retail use. By balancing jobs and housing at the site, Springfield would reduce the number of vehicle trips along the corridor while diminishing the amount of auto emissions.

Problem: Selected Land Uses May Not Adequately Fit Into the Corridor Without Some Community Feedback

Boston Road Corridor Action #8 - Adopt the Site Plan Approval Procedure

Springfield should adopt a site plan approval process to establish criteria for the review of projects to ensure that selected uses are "in harmony" with the surrounding area. The site plan approval process allows a community to review a project and impose reasonable conditions on the project to ensure that the project "fits" into the community. A site plan reviews the layout, scale, appearance, safety, environmental impacts and other criteria before a building permit is issued. If the project does not meet the site plan approval criteria, the Planning Board can impose conditions in order for the development to meet community standards; however, a project cannot be prohibited or denied in the site plan approval process. By adopting site plan approval, the City can ensure that a development will fit into the community and the developer will know what the community's expectations are for his development.

4.14 Land Use Recommendations Specific to Wilbraham

Problem: Lack of Sewer Capacity May Restrict Future Development

Boston Road Corridor Action #9 - Improve Sewer Capacity

The properties along Boston Road in Wilbraham, west of Cottage Street, are required to connect to the waste water treatment plant at Bondi's Island. Permitted discharges are limited by the terms of the sewage treatment contract between Springfield and Wilbraham. Springfield is concerned that its sewage system is near capacity and since May of 1993 has stopped issuing sewer permits for developments which generate more than 15,000 gallons per day (gpd) of waste. The 15,000 gpd cap effectively stops all but the smallest commercial developments from locating along the Wilbraham section of Boston Road. Springfield has not yet conclusively determined the capacity of the system available for new development on the Boston Road corridor. This uncertainty makes development permitting less predictable at a time when Wilbraham wants to implement economic develop initiatives. Springfield should precisely determine its sewage treatment capacity and should work with Wilbraham to allocate capacity for Boston Road according to the actual limitations of the Bondi's Island treatment plant.

Wilbraham must also explore alternative strategies to increase sewer capacity. Wilbraham's Waste Water Treatment Plant (WWTP) discharges treated wastewater into the Chicopee River. The facility was designed in the 1970s with an extended air process. This process had several problems, including sludge beds that did not dry properly, very high electric bills and poor quality processed wastewater discharges. The facility was designed for domestic wastewater treatment but received larger than expected volumes of commercial and industrial wastewater. These problems caused the facility to exceed state permitted discharge limits for certain pollutants.

The Wilbraham Department of Public Works (DPW) has obtained the services of an engineering consulting firm to do a very preliminary investigation of the physical condition of the plant and to provide a description of the mechanical requirements for bringing the treatment plant back on line. The Town should obtain and commit greater funding to investigate the feasibility of bringing the facility back on line. A larger funding commitment will be required to determine if the WWTP is a feasible solution to Wilbraham's sewer capacity problem. If further funding were acquired, an engineering consultant should be retained to describe several different alternatives and respond to a scope of services which should include:

- The feasibility and associated costs of using the WWTP as a temporary storage facility for wastewater to allow discharge during off-peak hours and to avoid discharges that exceed allowable limits;

- The feasibility and associated costs of primary treatment of domestic, commercial, and industrial wastewater to remove suspended solids (SS), and Biological Oxygen Demand (BOD) before discharge to Springfield's sewer system;

- The environmental, economic and physical issues involved in using the facility to treat grease and septage from regional sources as well as traditional wastewater;

- Identifying alternative funding strategies that will bring the plant back on line including grants and loans for reconstruction, including State Revolving Loan Funds and alternative strategies such as betterment districts for charging development fees for new discharges to pay for WWTP upgrades; and

- An analysis of the advantages and disadvantages of public versus private sector ownership of the plant.

As a supplemental practice, the town should also consider a requirement that new construction provide on-site storage of wastewater and release it during non-peak flows. Friendly's Ice Cream Company, for example, invested in on-site storage and now discharges to a Boston Road sewer connection during off-peak hours.

Problem: No Access to Chicopee River

Boston Road Corridor Activity #10 - Create a River Protection District

A river protection district would be designed to create an area which enhances the riverfront, provides public access and preserves visual access to the Chicopee River. The district would also be established for flood control benefits and to prevent development which would have adverse impacts on the infrastructure of the Boston Road corridor. Some of the standards that would apply in the district would be:

- Flood control measures that disallow new encroachments (including fill, new construction, substantial improvements to existing structures, or other development)

unless it was demonstrated by the applicant that the proposed development, as a result of compensating actions, would not result in any increase in flood levels during the occurrence of a 100-year flood;

- A requirement that all new and replacement water supply systems be designed to minimize or eliminate infiltration of flood waters into the system;

- New and replacement sanitary sewage systems would be designated to minimize or eliminate infiltration of flood waters into the system and discharge from the system into flood waters;

- New on-site waste disposal systems would be located to avoid impairment or contamination from them during flooding and be located no less than 150 feet from the riverbank; and

- Riverfront design guidelines such as the creation of a 50-100 foot buffer strip, the prohibition of roadways, utility power lines, and incompatible signs from the shoreline and the avoidance of excessive or unnecessary grading.

4.20 IMPROVEMENTS TO ADDRESS FUTURE TRAFFIC GROWTH

Traffic conditions were analyzed along the Boston Road corridor for existing conditions and as a result of the two build-out scenarios. As mentioned previously, the proposed improvements to the Boston Road corridor from Pasco Road to Breckwood Boulevard have been included in all future analysis. The proposed recommendations are divided into two categories. The Short Term recommendations are meant to be lower cost solutions geared toward the elimination of existing problems. Long Term recommendations are higher cost strategies which serve to reduce the impact of future traffic growth in the area. The implementation of long term strategies may require land taking in some areas.

4.21 Short Term Improvements

Boston Road at Parker Street. The westbound approach of Boston Road currently does not align properly with the two departure lanes from the intersection. This results in driver confusion as to which lane should be used to exit the intersection. The existing lanes should be re-striped to provide better alignment at this intersection. In addition, the construction of acceleration lanes for right turning vehicles may cut down on the number of "rear end" accidents at this intersection.

Boston Road at Stony Hill Road. A total of 42 accidents (average of 14 per year) were reported at this intersection from 1990 to 1992. Of these accidents, 27 or 64% were angle collisions which can be reduced through the installation of exclusive turning lanes and signal phases. In addition, this intersection satisfies Warrant #6, Accident Experience as defined in the MUTCD. Under this warrant an intersection must experience five or more reported accidents over a 12 month period of a type correctable by traffic signal control.

The redesign of this intersection was to be funded by the proponent for the "Stony Hill Shops" as one of the mitigation measures for the project, but never reached the 100% design level. A new developer has taken over the "Stony Hill Shops" project and filed a "Notice of Project Change" for the site, proposing a cinema complex. The new proponent has agreed to part of the original mitigation package of the "Stony Hill Shops" and the intersection of Boston Road with Stony Hill Road is currently in the design stage. It is recommended that the Town of Wilbraham continue to work with the MHD and private developer to advance plans to improve safety at this intersection.

Boston Road at Kent Road. The eastbound approach of Boston Road tapers from two lanes to one lane between the Eastfield Mall/JC Penny egress drive and Kent Road. This change is indicated by a regulatory sign on Boston Road, but there are no pavement markings to guide through traffic into the appropriate lane. This, in turn, causes many drivers to use the exclusive right turn lane on the eastbound approach to make a through movement, inviting a sideswipe or angle collision. New pavement markings should be installed along this approach to taper through traffic into the left lane and better highlight the exclusive right turn lane at Kent Road.

Emergency Signal Pre-preemption. Currently, emergency vehicles are severely restricted by the divided section of Boston Road between Kent Road and Parker Street in Springfield. Emergency vehicles responding to a call can get "trapped" between the median island and edge of the roadway when traffic is stopped on Boston Road at a red light. As defined in the MUTCD, "Traffic control signals may be modified in timing, sequence or display to grant priority control to authorized special classes of vehicles, (such as emergency, transit, construction, trains, boats, etc.)".

These four intersections should be upgraded by the MHD to include emergency signal pre-preemption equipment and phases. When activated by an emergency vehicle, the equipment would change the Boston Road signal display to "green" allowing any obstructing traffic to advance to a point where passing is more permissible. The City of Springfield and Town of Wilbraham should be responsible for the installation of the necessary activation equipment on emergency vehicles.

Traffic Signal Timings. Traffic signal timings should be rechecked periodically in order to ensure that existing signalized intersections are operating at acceptable levels of service as traffic patterns tend to fluctuate due to changes in population and development throughout the area. The development of new signal timings along with routine pavement marking maintenance is a low-cost strategy which can yield large benefits in time savings and increased safety.

Consolidation of Curb Cuts: Attempts should be made to consolidate wide-open curb cuts along the Boston Road corridor. The definition of site access drives will reduce the number of accidents currently experienced along the corridor.

Woodcrest Condominiums Access Site. Traffic attempting to exit Woodcrest Condominiums onto Boston Road currently is impacted by sight distance restrictions. The driveway intersects a section of Boston Road that slopes downward in both the east and west directions. This problem could be addressed through the installation of a traffic signal at this intersection. However, this location would need to meet the signal warrants criteria as defined in the MUTCD.

Pedestrian Amenities. An inventory of the existing pedestrian facilities was conducted as part of Technical Memorandum #1. Several deficiencies were reported as a result of this inventory with the most important being the lack of sidewalks along the Boston Road corridor in Wilbraham and the deteriorating condition of existing sidewalks in Springfield. The recommendations made in the Land Use section of this document should be advanced in the short term in order to advance plans for improved pedestrian access before the anticipated future traffic increases along the corridor.

In order to provide safe, efficient pedestrian access to the Spec Pond recreation area, the Town of Wilbraham should install sidewalks and crosswalks along Boston Road in this area.

4.22 Long Term Improvements

Signal Coordination. The MUTCD recommends that all traffic signals be coordinated with other signals within a one-half mile distance to develop "platoons" of traffic along the roadway. The coordination of traffic signals would allow for better progression along the Boston Road corridor by increasing the average travel speed of through traffic. In addition, the creation of "platoons" of traffic will result in larger gaps in the intersections along the corridor.

Springfield. It is recommended that the proposed signal coordination plan for the existing signals between Pasco Road and Breckwood Boulevard be extended in the future to include all signalized intersections up to the Wilbraham town line. In addition, discussion should be held with the Massachusetts Highway Department in order to determine the feasibility of including the signal at the intersection of Stony Hill Road with Boston Road in this coordination plan.

Wilbraham. The Town should request that all new traffic signals proposed for the Boston Road corridor be coordinated with existing locations, where applicable. In addition, discussions should be held with the Massachusetts Highway Department in order to determine the feasibility of including the signal at the intersection of Stony Hill Road with Boston Road in any future coordination plans by the City of Springfield.

Other Long Term Improvements

Boston Road at Parker Street. The institution of new signal timings at this intersection will improve traffic flow operations in the future. The construction of a dual left turn lane, if possible, may be necessary on the northbound approach of Parker Street to the intersection.

Boston Road at Stony Hill Road. This intersection experienced a high rate of crossing movement collisions from 1990-1992. The construction of exclusive left turn lanes on all four approaches to the intersection should result in a reduction in accidents at this location. Traffic volumes should continue to be monitored at this intersection in order to determine the feasibility of constructing exclusive right turn lanes on the north, south and eastbound approaches to the intersection.

Boston Road at Old Boston Road. Traffic volumes should continue to be monitored at this location. There is the potential for large increases in traffic on Old Boston Road as growth continues to occur in Wilbraham, specifically around Cordelia Circle. Old Boston Road can be utilized to access the Massachusetts Turnpike in Ludlow which increases the attractiveness of this roadway. The construction of a dual left turn lane on the Old Boston Road approach to the intersection may be necessary as traffic continues to grow in this area.

Boston Road at Cottage Street. This intersection currently meets the requirements of Signal Warrants 1 and 2 as defined in the MUTCD. While this location operates at acceptable levels of service under existing conditions, it is expected to deteriorate to

Level of Service "F" under the Build-Out Scenarios. In addition, the existing railroad underpass presents sight distance problems for vehicles attempting to turn left onto Boston Road from Cottage Avenue. A fully actuated traffic signal should be installed at this location in the future. The signal may also be suitable for coordination with adjacent signals.

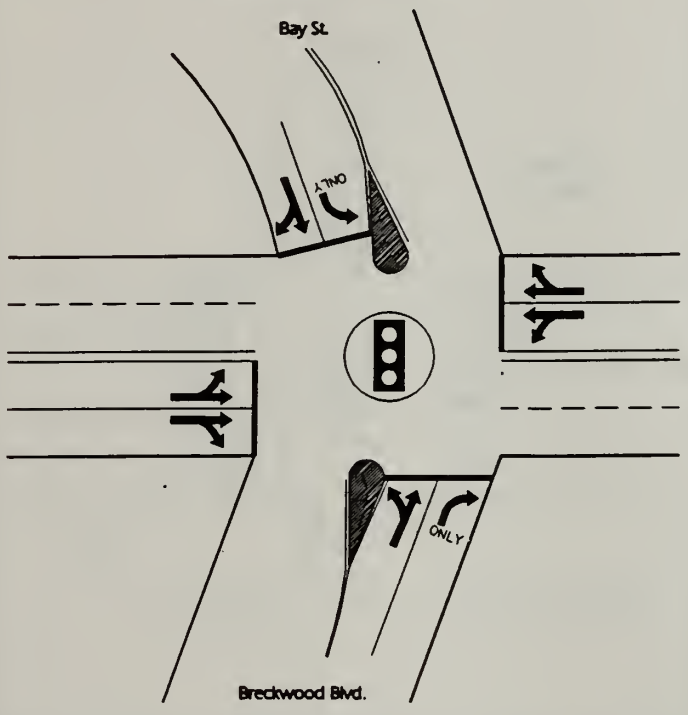
Pedestrian Amenities. Care should be taken along the corridor to provide safe, efficient pedestrian access at future signalized intersections. In addition, efforts should be made to upgrade all existing signalized locations to include actuated pedestrian phases.

Future Traffic Increases. Based on the results of the Level of Service analysis, it appears that the future traffic generated under Build-Out #2 will have a significantly less impact on the Boston Road corridor than Build-Out #1. It is recommended that the Land Use Strategies set forth in this document be considered in order to better effectively control and manage traffic growth along the Boston Road corridor.

Traffic volumes should be monitored at key locations along the Boston Road corridor. The Pioneer Valley Planning Commission has an existing traffic count program in place, and is committed to future traffic counts along the Boston Road corridor.

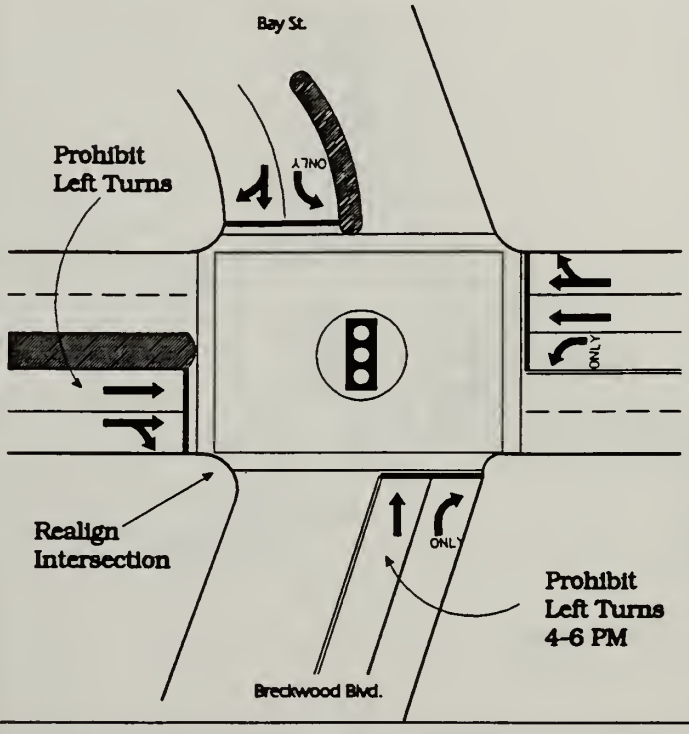
All recommendations, both short and long term, are summarized in Figures 4.2-1 through 4.2-9.

Existing Conditions



Proposed Improvements

by City of Springfield



Short-Term Recommendations

No Additional Improvement

Long-Term Recommendations (2010)

No Additional Improvement

Boston Road Corridor Study
Springfield - Wilbraham

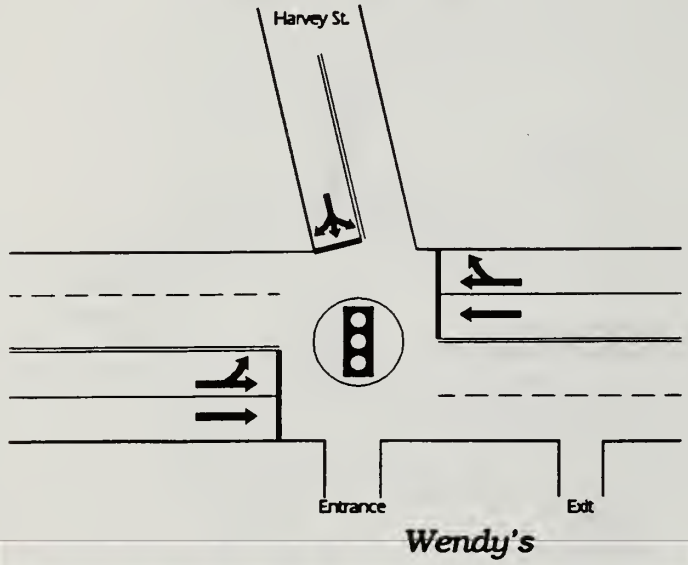
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
September 1995

NOT TO SCALE.

Figure 4.2-1

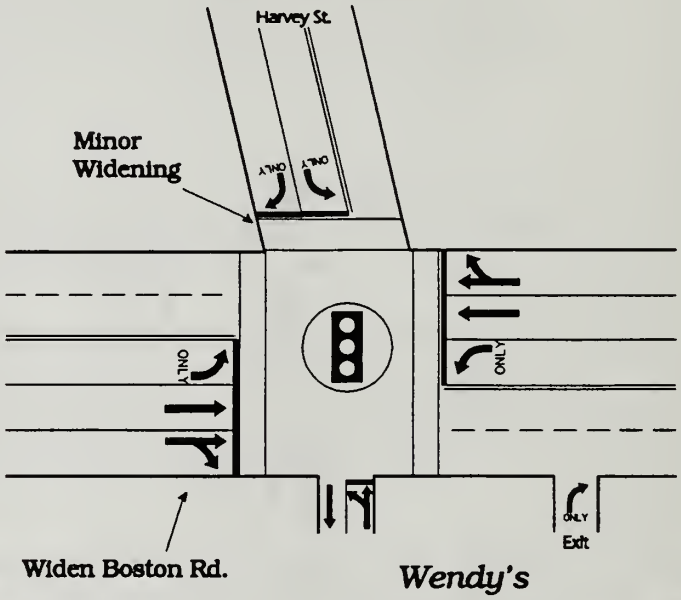
Recommended Improvement Plan
Boston Rd. @ Bay St. & Breckwood Blvd.

Existing Conditions



Proposed Improvements

by City of Springfield



Short-Term Recommendations

No Additional Improvement

Long-Term Recommendations (2010)

No Additional Improvement

Boston Road Corridor Study
Springfield - Wilbraham

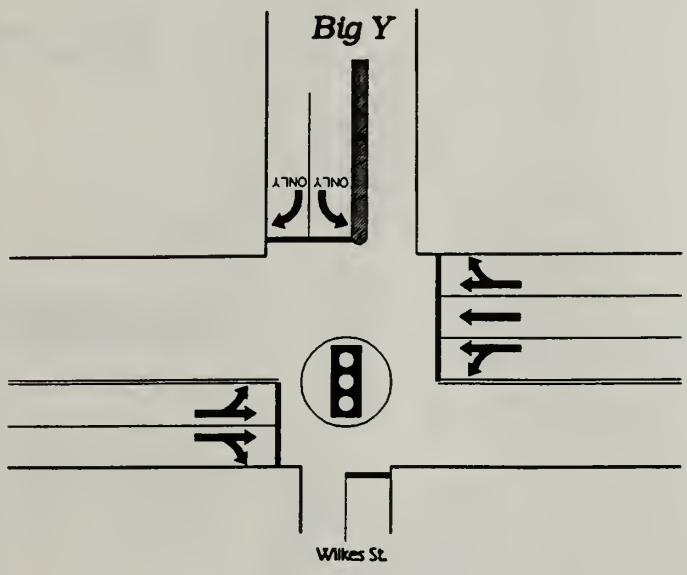
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
September 1995

NOT TO SCALE.

Figure 4.2-2

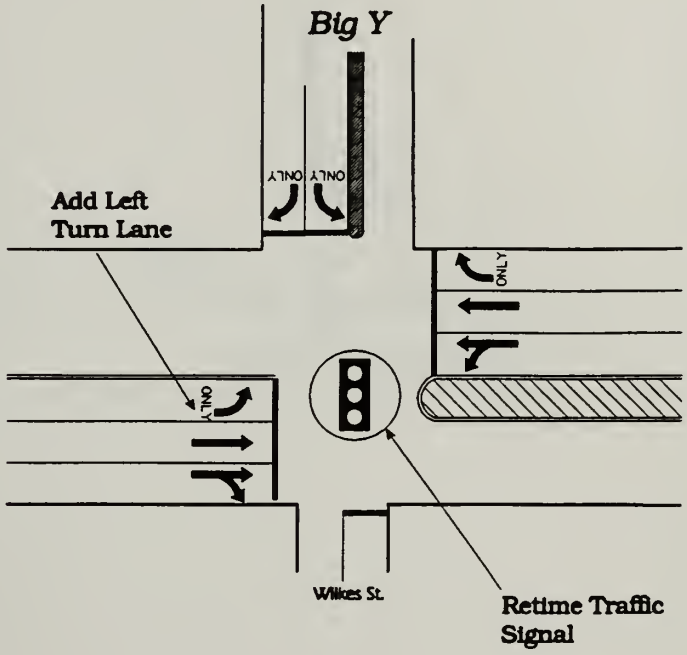
Recommended Improvement Plan
Boston Rd. @ Harvey St.

Existing Conditions



Proposed Improvements

by City of Springfield



Short-Term Recommendations

No Additional Improvement

Long-Term Recommendations (2010)

No Additional Improvement

Boston Road Corridor Study
Springfield - Wilbraham

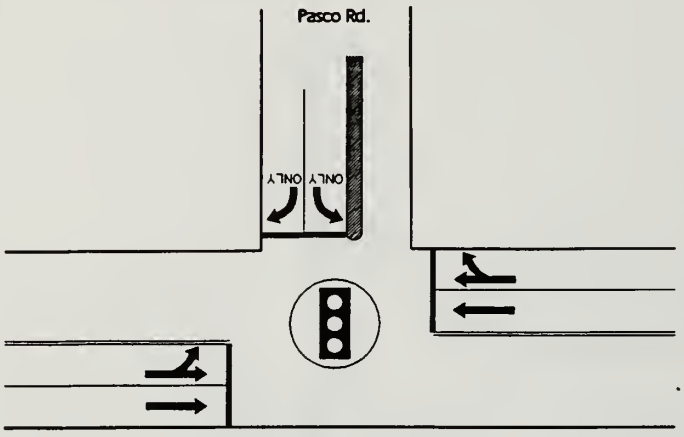
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
September 1995

NOT TO SCALE.

Figure 4.2-3

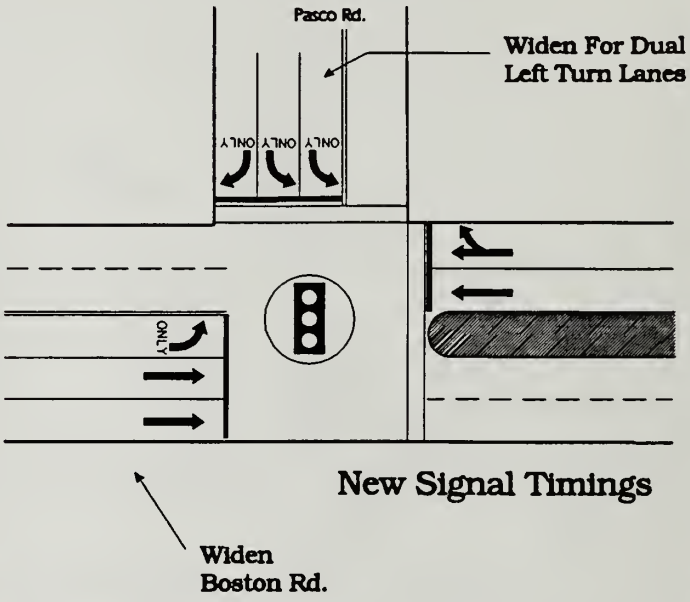
Recommended Improvement Plan
Boston Rd. @ Big Y & Wilkes St.

Existing Conditions



Proposed Improvements

by City of Springfield



Short-Term Recommendations

No Additional Improvement

Long-Term Recommendations (2010)

No Additional Improvement

Boston Road Corridor Study
Springfield - Wilbraham

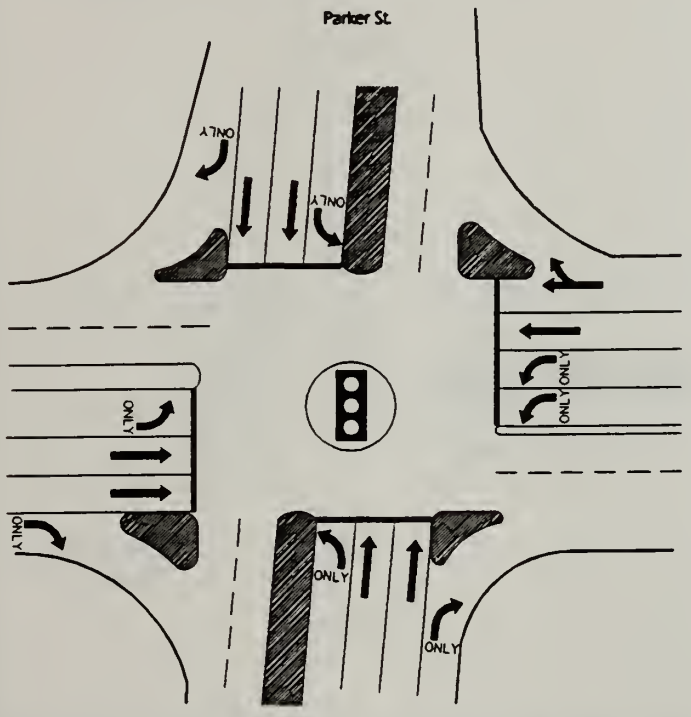
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
September 1995

NOT TO SCALE.

Figure 4.2-4

Recommended Improvement Plan
Boston Rd. @ Pasco Rd.

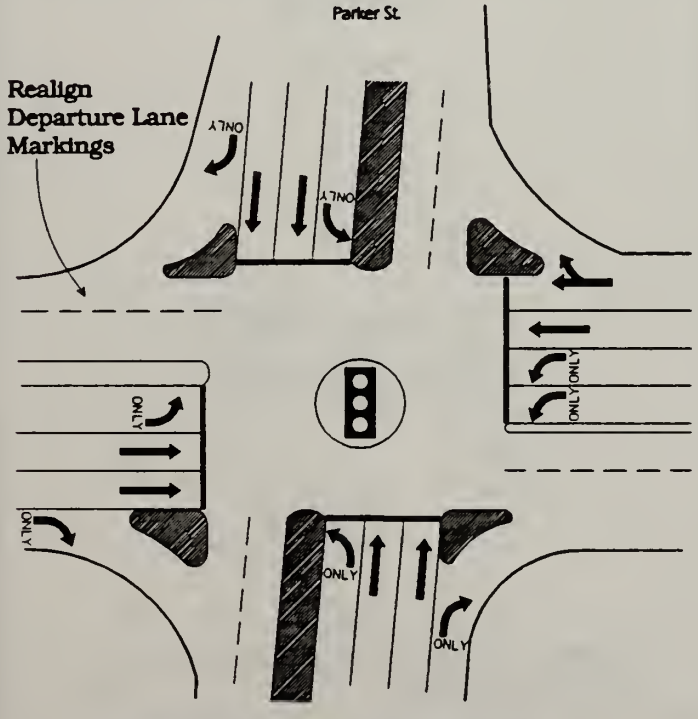
Existing Conditions



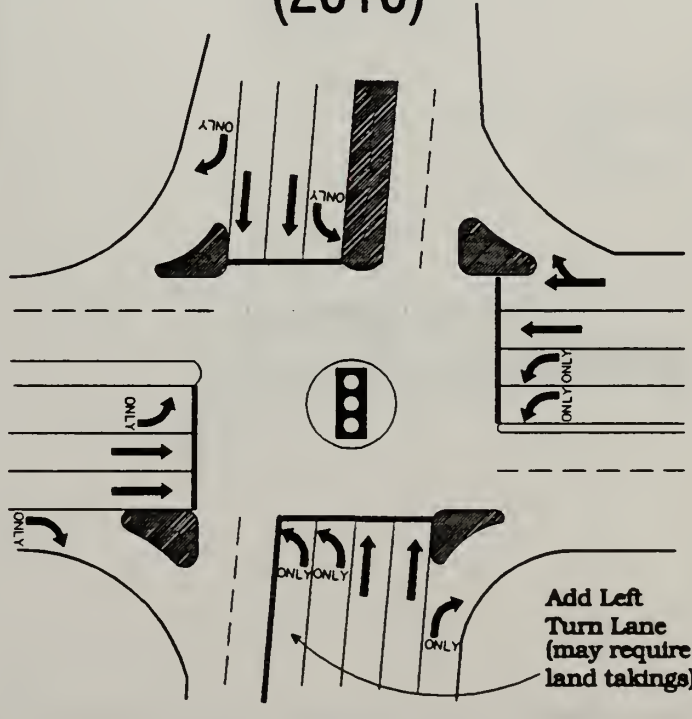
Proposed Improvements

No Planned Improvements

Short-Term Recommendations



Long-Term Recommendations (2010)



Boston Road Corridor Study
Springfield - Wilbraham

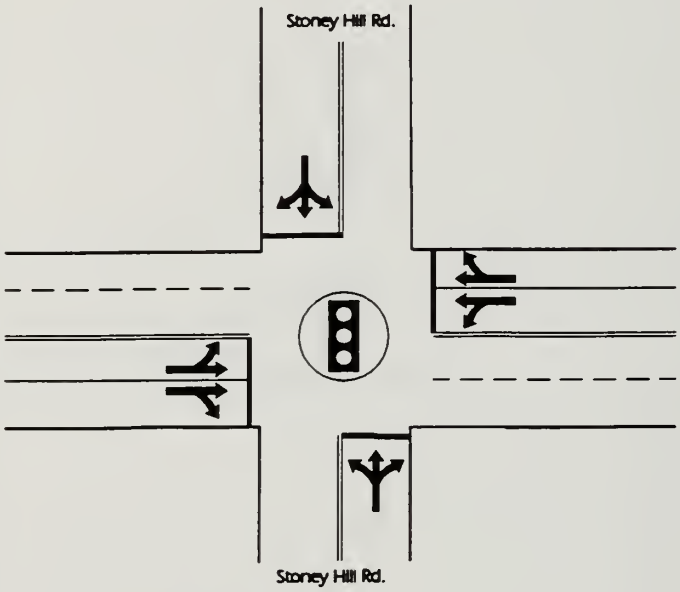
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
September 1995

NOT TO SCALE.

Figure 4.2-5

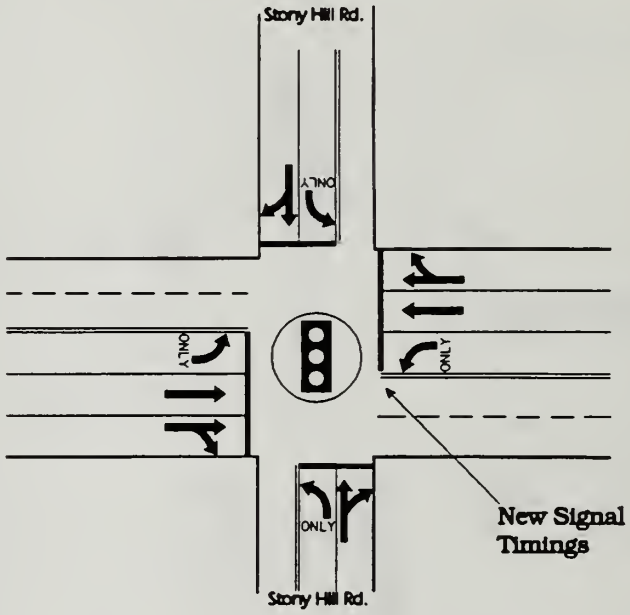
Recommended Improvement Plan
Boston Rd. & Parker St.

Existing Conditions



Proposed Improvements

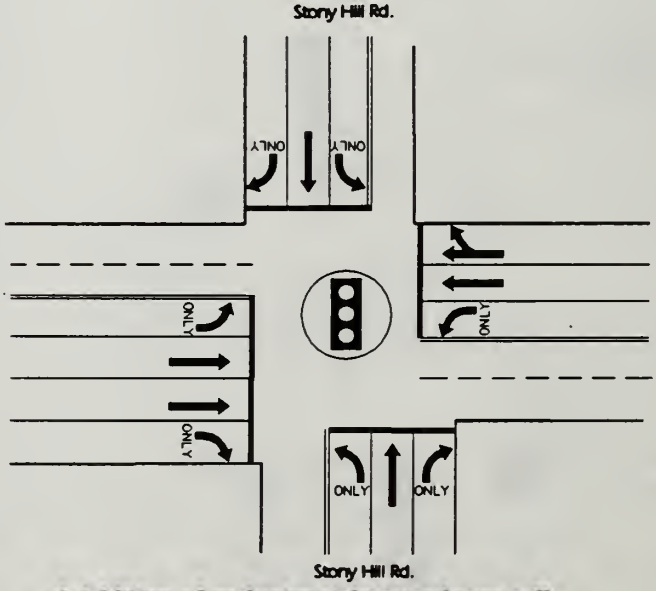
by Massachusetts Highway Department



Short-Term Recommendations

No Additional Improvement

Long-Term Recommendations (2010)



* Addition of exclusive right turn lanes will require land takings.

Boston Road Corridor Study
Springfield - Wilbraham

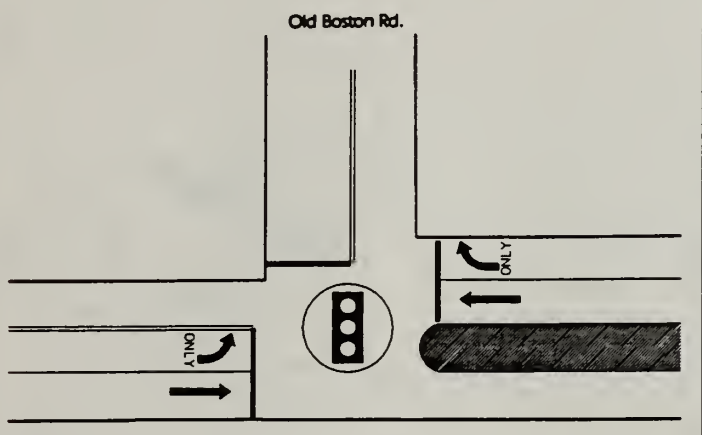
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
September 1995

NOT TO SCALE.

Figure 4.2-6

Recommended Improvement Plan
Boston Rd. @ Stony Hill Rd.

Existing Conditions



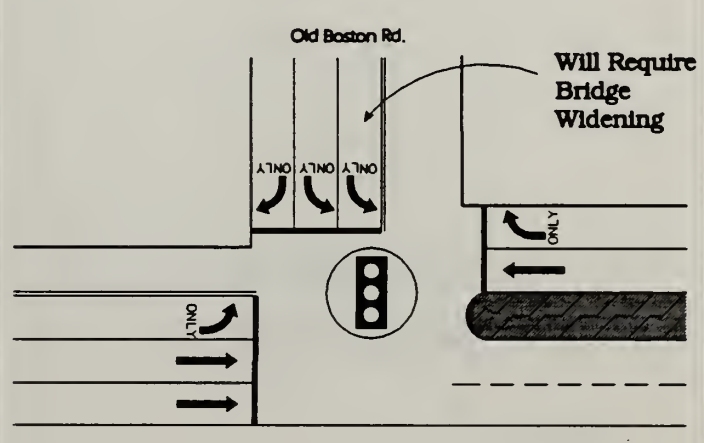
Proposed Improvements

No Planned Improvements

Short-Term Recommendations

No Additional Improvement

Long-Term Recommendations (2010)



Boston Road Corridor Study
Springfield - Wilbraham

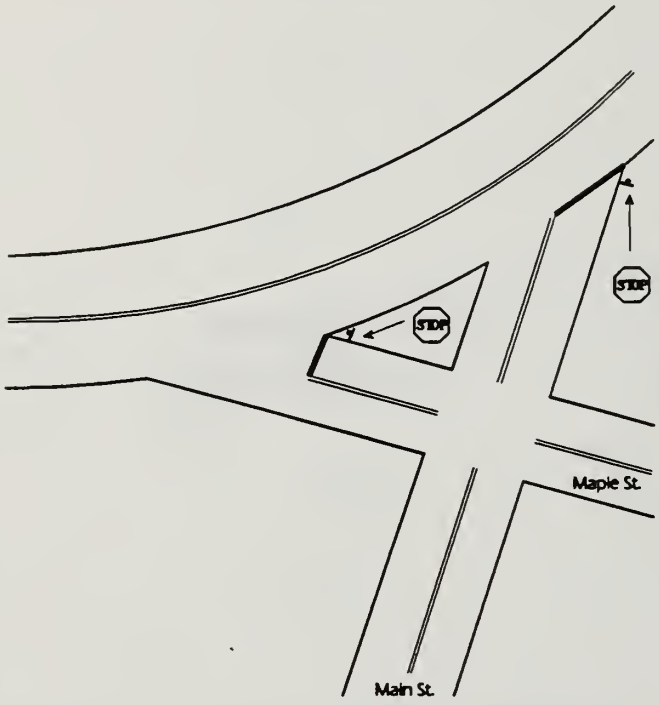
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
September 1995

NOT TO SCALE.

Figure 4.2-7

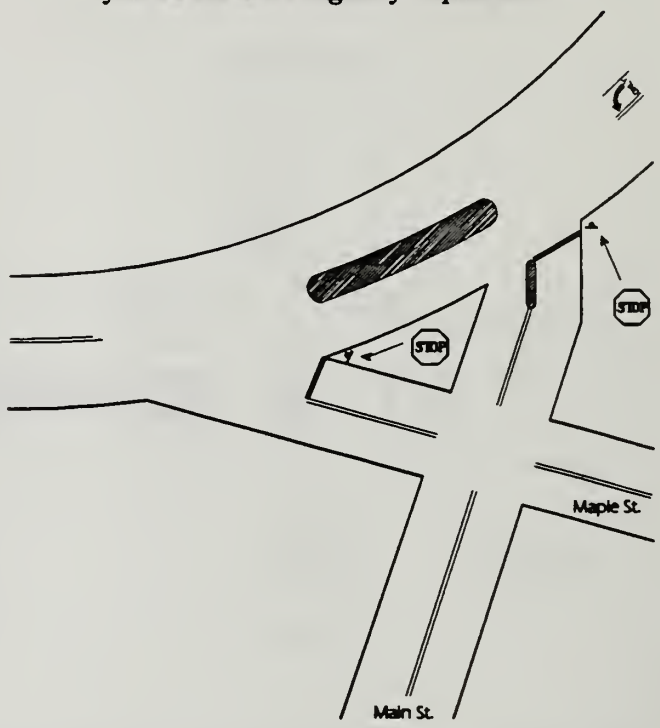
Recommended Improvement Plan
Boston Rd. @ Old Boston Rd.

Existing Conditions



Proposed Improvements

by Massachusetts Highway Department



Short-Term Recommendations

No Additional Improvement

Long-Term Recommendations (2010)

No Additional Improvement

Boston Road Corridor Study
Springfield - Wilbraham

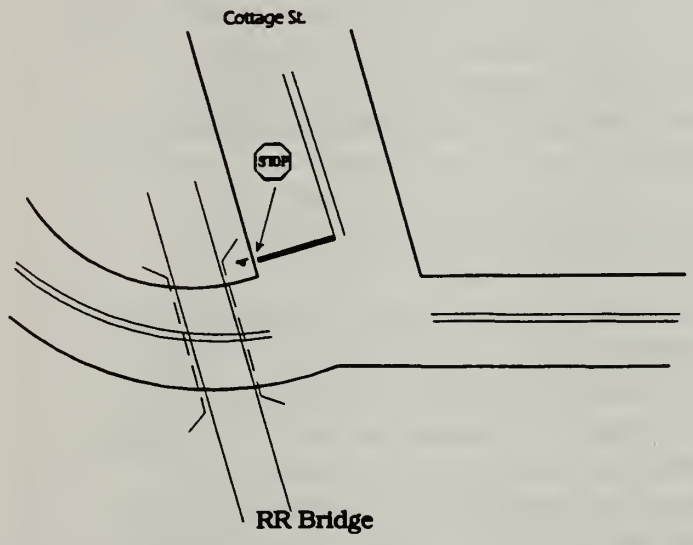
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
September 1995

NOT TO SCALE.

Figure 4.2-8

Recommended Improvement Plan
Boston Rd. @ Main St. & Maple St.

Existing Conditions



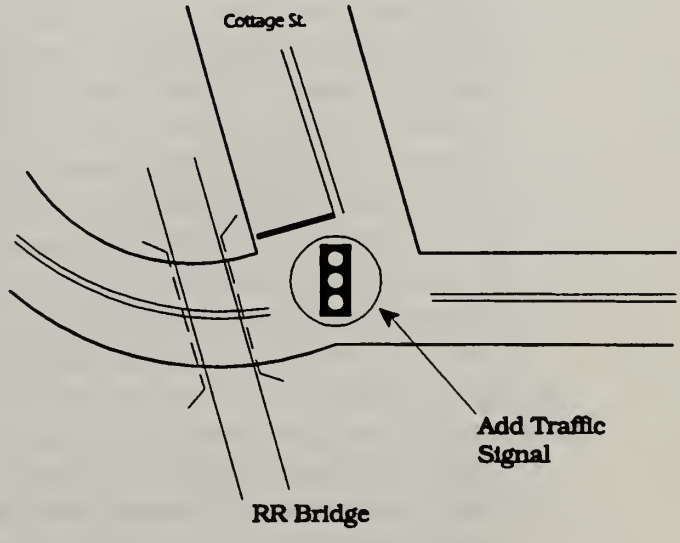
Proposed Improvements

No Planned Improvements

Short-Term Recommendations

No Additional Improvement

Long-Term Recommendations (2010)



Boston Road Corridor Study
Springfield - Wilbraham

Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
September 1995

NOT TO SCALE.

Figure 4.2-9

Recommended Improvement Plan
Boston Rd. @ Cottage St.

4.30 RECOMMENDED TRANSIT IMPROVEMENTS

There have been two major studies of the transit services on the Route 20/Boston Road Corridor. The PVTA Route 107 survey was conducted in June of 1994 and is referenced previously in this corridor study. Also, as part of a broader analysis of PVTA's transit service, a consulting firm hired by the PVTA studied service along the corridor. The recommendations of each of these studies are outlined.

4.31 PVPC Recommendations from the Route 107 Origin/Destination Survey

The PVPC survey of PVTA Route 107 showed that its ridership, predominantly under the age of 50, uses Route 107 to commute to and from school and work. PVTA has already made significant efforts to cater to these populations. Currently extra buses, called "trippers", are operated between the schools on Boston Road and the downtown. In addition, several outreach programs, such as monthly pass programs and travel training programs, have been made available to the business sectors. Efforts in these directions should be redoubled. Even the shopping centers, which logically generate shopping trips, are also generating a very large percentage of work trips. In fact, nearly a third of the alightings at KMart, WalMart, Big Y, Sears and Eastfield Mall are for employment purposes. Furthermore, 92.1% of all work related trips in the survey were made by passengers who ride multiple times per week. The addition of a single rider under these circumstances translates into a 6 to 10 trip increase in ridership per week and a 312-520 trip increase per year. Therefore, these riders should be the major target of marketing efforts.

Surprisingly, the elderly sector of the population does not utilize Route 107 nearly as much as expected. The 1990 Census data showed moderate percentages of elderly population along the State Street and Boston Road corridor. However, overall population in the area is not overly dense and the high transfer rate downtown leads to the theory that most of the ridership is created by persons living in other areas. Though it may be that there are just too few elderly in the area, many other reasons exist that create stigmas for the elderly against riding the bus. The generally young ridership and the multitudes of students on Route 107 may cause the belief that the route is unsafe. There have been no notable incidents, but poor schedule adherence has resulted in long waits at bus stops, eliciting the elderly to feel insecure and a lack of confidence in the service. With the improvement in schedule adherence and the addition of bus stop amenities in key locations these stigmas can be reduced. However perceived, enhanced safety on the route may go a long way in attracting older ridership. Safety improvements such as the installation of video equipment on buses, or instituting a transit police force are ideal but very expensive alternatives. A volunteer student run escort service for the elderly could be an inexpensive solution. Ridership could be enhanced by utilizing some sort of matching system where the elderly can call in and reserve an escort for a particular trip.

As of September 1994, PVTA adopted several changes to the Route 107 schedule and decided to offer the new service on a trial basis. PVTA has since implemented these service changes permanently. The basic premise of the new schedules was to increase

running times for the buses to complete a full circuit on route. As a result, drivers are able to do significantly better in schedule adherence. PVPC survey findings support these changes.

There are, however, potential pitfalls with the new system that need to be avoided. There will be better times during off-periods that the 90 minute running time will be more than ample enough to complete the route. This layover time should be used to benefit passengers who are transferring. Layovers at Eastfield Mall should be avoided and instead, schedule the route so that the bus can spend more time at Main and Harrison where passenger traffic is at its highest. Those buses scheduled for Eastfield Mall should also serve Independence House. Survey findings show that most trips by the elderly are for shopping. This will give the elderly an opportunity for direct service to all shopping area beyond WalMart and may induce ridership.

Sunday service was a real issue for the ridership. Efforts should be made to bring about the additional service. Most other Springfield routes would need to be operated as well, thereby making this an expensive proposition.

The possibility of establishing a Park-n-Ride lot at the easternmost terminus should be explored. A Park-n-Ride lot would provide an ideal turn around point and allow residents in communities east of Springfield a convenient commute option.

All bus stops should be properly marked with signs. Adding route numbers and schedule information to the signs would greatly improve the passenger "friendliness" of the PVTA system. The following stops need signs:

OUTBOUND	INBOUND
Boston & Gresham	Boston & Pasco
Boston & Slater	Boston & Pine Grove
Boston & Parker	Boston & Lloyd
Sears Automotive	Boston & Elmore
The Path	Boston & Glenwood

The shops at Eastfield Mall, Boston Road and Wilker, and Boston Road and KMart Plaza should have shelters and benches installed since they were found to have high usage. Table 4.3-1 illustrates some additional bus stop recommendations. During the development of the corridor study, KMart vacated the plaza it occupied. PVTA will be moving the stop up to Boston Road at the location. Though the boardings and alightings there will diminish, the new stop should have the volume to warrant a shelter.

No capacity problems are forecast for Route 107 in the corridor study area over the build-out scenarios outlined in the traffic and land use sections. A possibility exists that overcrowding may occur at points closer to downtown but outside the study area. Any improvements to the route on the State Street portion will translate into added capacity on the Boston Road section. Several traffic recommendations, if implemented, could actually reduce the needed running time for the buses on Route 107. If that does occur, PVTA will have the flexibility of reducing the number of buses necessary at peak times

or extend Route 107 out Boston Road into Wilbraham. The Wilbraham Shops or Cordelia Circle represent possible termini for Route 107, depending on development in the area.

Table 4.3-1
Bus Stop Recommendations

OUTBOUND	SUGGESTED CHANGE AND EXPLANATION
Boston & Coleman	Move to a point opposite Boston & Preston.
Boston & Barber	Eliminate in lieu of relocated Boston & Coleman.
Boston & Glenwood	Eliminate due to low volume.
Boston & Lloyd	Eliminate due to low volume.
All Stops between Big Y and WalMart	Re-evaluate the distance between these stops.
INBOUND	**SUGGESTED CHANGE AND EXPLANATION**
Boston & Glenwood	Eliminate due to low volume.
Boston & Lloyd	Eliminate due to low volume.
All Stops between Big Y and WalMart	Re-evaluate the distance between these stops.

4.32 Consultant - Comprehensive Operational Analysis Recommendations

After conducting an operational analysis of the PVTA in 1992, a consultant did not make any recommendations for the improvement of Route 107, with the exception of suggesting that all buses on Route 107 serve Eastfield Mall. Currently, every other bus serves the Mall. The consultant does, however, recommend major changes to the other routes currently serving the Boston Road/Route 20 corridor.

PVTA Route 403, which presently utilizes Wilbraham Road and Parker Street to serve Eastfield Mall from its terminus in Downtown Springfield, would be extended up Parker Street from Eastfield and Springfield Malls to Ludlow Center. By making this change, PVTA will be able to offer direct service to the Malls from Indian Orchard and Ludlow. Under the current system, residents in these areas need to ride Route 106 downtown to transfer to Route 107, resulting in lengthy trips.

It is suggested by the consultant that Route 401, currently serving the Town of Wilbraham, be replaced with General Public Demand Response service (GPDR), due to very low ridership. GPDR service is a reservation-based van service that will transport a passenger from their home to a transfer point where the PVTA fixed route system can be accessed. Justification for the replacement of Route 401 with GPDR can be found in a review of its ridership statistics. The 0.11 passengers per mile ridership rate is the lowest in the PVTA system. With 1.14% of the system's total revenue hours, Route 401 generates only 0.05% of the total boardings. It can be maintained that a large proportion of Route 401 ridership is generated within Springfield, which can be adequately served by Route 403. General Public Demand Response service will allow

all Wilbraham residents to utilize "door-to-route" van service. The van service will transport the passenger to one of five transfer points, where the passenger can access the fixed route service.

A potential alternative to the GPDR system would be to create some sort of fixed route feeder service in Willbraham. Similar to GPDR, the feeder service would entail the purchase of a smaller vehicle and would not provide direct service to Downtown Springfield. However, the feeder service would operate a fixed route and meet Route 107 or 403 for timed transfers to Eastfield Mall. It could also provide service to other major trip generators, such as nursing homes, community centers and other areas that are currently not receiving service. Service to these locations would be relatively cost-effective, though costs for the feeder service will be higher than GPDR, largely because the GPDR would not operate when there is no demand. A disadvantage to both the feeder service and GPDR is the loss of convenience to riding one bus to travel to Downtown Springfield. It will be necessary to schedule either type of service in such a way that transfer to and from the major fixed routes will take as little time as possible. Both services would eliminate the incurred miles between the Wilbraham town line and Downtown Springfield thereby reducing the overall costs to provide sufficient service to Wilbraham.

Prepared by
THE PIONEER VALLEY PLANNING COMMISSION
26 Central Street
West Springfield, Mass. 01089-2787